AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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THE INTRUDERS.—*Drawn and Engraved for the American Agriculturist.*

Success in farming depends almost wholly upon attention to small details. This is true, indeed, of any business, and it is by looking after cents that the dollars are saved, in whatever way we may be working. But in agriculture, in gardening, in fruit growing, and in any other manner of cultivating the soil, attention to details is the chief concern. Neglect for one day, or one hour, may cause a loss which many days' labor may be required to recover. This is exemplified in hundreds of ways during a man's life; and it is a strange thing, that repeated experiences, at the best, are required to fix the fact so firmly upon the mind that it becomes a rule of action with us, a habit, or an impulse, to be careful, and to watch that small things shall receive proper and prompt attention. Perhaps this is more evident with those who have to trust much work to hired men, than to those who are always about their own business. To look after details requires thought, consideration, promptness of decision, constant observation, and a habit of orderly arrangement. In the single item of neglect of tools a considerable loss is made every year. The tools and machines on a farm now represent a large sum of money. A thousand dollars will hardly stock a 100-acre farm with all the needed implements. These will be used up in ten years even with the most careful management, so that the annual cost will be at least $100. But by leaving the implements and machines in the field, to be alternately roasted in the sun and soaked in the rain, or to be covered with dust in an open shed, their useful life is reduced one half. Here is a direct loss of $100 yearly, which could be saved. Perhaps a larger loss still is incurred in neglect of fences. Our illustration points a moral in this way, which speaks for itself. Poor fences are sufficient to absorb the whole of a farmer's profits. There is the loss of property by intrusion; the loss of time in ejecting the intruders; the damage to animals by chasing with dogs, or by the beating or punishing of them by irritated owners; and not the least, the cost of keeping a dog, with all the drawbacks and expenses incident to this, for the purpose of driving trespassing animals out of the fields. The constant worry, fear, and uncertainty, which prevail daily and nightly, preventing comfortable sleep and giving occasion to many nocturnal raids, for the purpose of driving out intruders, should be sufficient, without the loss of property or products of labor, to induce every farmer to take measures for protecting his crops, and to trust for safety to solid and substantial outer fences and well fastened gates, rather than to depend upon the ever-too-late remedy of ejecting trespassers by means of a dog. A well trained dog may do very useful service on a farm, but one can not very well make a fence or a gate of him. In many communities the law presents the best barrier against intruders, by compelling each man to shut in his own animals by building strong fences.

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Calendar for August, 1879.

1 Day of Month.	1 Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	F	4 52	7 20	rises	4 56	7 16	rises	5 1	7 11	rises
2	S	4 53	7 19	7 28	4 57	7 15	7 36	5 2	7 10	7 23
3	S	4 54	7 18	7 53	4 58	7 14	7 52	5 3	7 9	7 51
4	M	4 55	7 16	8 15	4 59	7 12	8 15	5 4	7 8	8 15
5	T	4 57	7 15	8 36	5 0	7 11	8 38	5 4	7 7	8 39
6	W	4 58	7 14	8 58	5 1	7 10	9 0	5 5	7 6	9 2
7	T	4 59	7 13	9 22	5 2	7 9	9 24	5 6	7 5	9 28
8	F	5 0	7 11	9 46	5 3	7 8	9 51	5 7	7 4	9 56
9	S	5 1	7 10	10 16	5 4	7 6	10 22	5 8	7 3	10 28
10	S	5 2	7 9	10 52	5 5	7 5	10 58	5 9	7 1	11 5
11	M	5 3	7 7	11 35	5 6	7 4	11 42	5 10	7 0	11 49
12	T	5 4	7 6	morn	5 7	7 2	morn	5 11	6 59	morn
13	W	5 5	7 4	0 26	5 8	7 1	0 33	5 12	6 58	0 40
14	T	5 6	7 3	1 25	5 9	7 0	1 32	5 13	6 56	1 39
15	F	5 7	7 2	2 31	5 10	6 58	2 36	5 14	6 55	2 42
16	S	5 8	7 0	3 40	5 11	6 57	3 44	5 14	6 54	3 49
17	S	5 9	6 59	sets	5 12	6 56	sets	5 15	6 52	sets
18	M	5 10	6 57	7 9	5 13	6 54	7 8	5 16	6 51	7 8
19	T	5 11	6 56	7 34	5 14	6 53	7 34	5 17	6 50	7 33
20	W	5 12	6 54	7 59	5 15	6 52	8 2	5 18	6 49	8 4
21	T	5 13	6 52	8 27	5 16	6 50	8 31	5 19	6 47	8 35
22	F	5 15	6 51	9 0	5 17	6 48	9 5	5 20	6 46	9 10
23	S	5 16	6 49	9 39	5 18	6 47	9 45	5 21	6 44	9 52
24	S	5 17	6 48	10 27	5 19	6 45	10 34	5 22	6 43	10 41
25	M	5 18	6 46	11 25	5 20	6 44	11 32	5 23	6 41	11 39
26	T	5 19	6 45	morn	5 21	6 42	morn	5 23	6 40	morn
27	W	5 20	6 43	0 31	5 22	6 41	0 37	5 24	6 38	0 44
28	T	5 21	6 41	1 41	5 23	6 39	1 47	5 25	6 37	1 53
29	F	5 22	6 40	2 53	5 24	6 38	2 58	5 26	6 35	3 2
30	S	5 23	6 38	4 4	5 25	6 36	4 7	5 27	6 34	4 10
31	S	5 24	6 36	rises	5 26	6 34	rises	5 28	6 32	rises

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	2	2 28 mo.	2 16 mo.	2 4 mo	1 52 mo.	1 22 mo.
3d Quart.	9	9 25 ev.	9 13 ev.	9 1 ev.	8 49 ev.	8 19 ev.
New M'n	17	3 26 ev.	3 14 ev.	3 2 ev.	2 50 ev.	2 20 ev.
1st Quart	24	10 28 mo.	10 16 mo.	10 4 mo	9 52 mo.	9 22 mo.
Full M'n	31	2 14 ev.	2 2 ev.	1 50 ev.	1 38 ev.	1 8 ev.

AMERICAN AGRICULTURIST.

NEW YORK, AUGUST, 1879.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

The Stubbles are now idle upon most farms. This is not desirable; dry weather at this season seriously interferes with plowing, and the work can not be well done if it is delayed. As soon as the oats have been removed the ground should be plowed, and if the weather continues dry, it should be cultivated or worked with the harrow. The disk or wheel harrow is excellent for this purpose. Otherwise a cross plowing should be given before the ground becomes hard. The loosened surface will keep the bottom from drying out.

Wheat requires a fine and mellow soil, it is best if compact below and roughish on the top. If there are any clods, these should be brought up from below by repeated harrowings, and broken by the roller or the disk harrow. If they can not be broken up completely they are better on the top than below the surface. A roller will break many.

Drilling Wheat.—Many farmers are testing the practice of cultivating wheat. We hear of frequent experiments in this direction, and these have generally turned out satisfactorily. Cultivating or hoeing is easily done by drilling the wheat in 16-inch rows, by stopping every alternate spout. It is not difficult to construct a simple cultivator that will work the spaces between the drills. There are two different wheat hoes in the market that do the work effectively. Wheat that is sown broadcast can not be cultivated. This fact, and the better condition of drilled wheat, should be sufficient inducement to use the drill, if the great saving of seed and the lessening of labor are not.

Rye.—Where the soil is not good enough for wheat, rye will be sown; but, as a general thing, soil that will make a good crop of rye can be made sufficiently rich for wheat by careful preparation, and the use of 250 or 300 lbs. of artificial fertilizer.

Liming Land.—Lime is an old-fashioned fertilizer, but it should not for that reason be neglected. It is cheap, and rarely fails to pay well for its use when land is to be seeded to grass and clover. Forty bushels per acre of air-slaked lime is usually spread from the wagon with a long handled shovel upon the plowed ground, and harrowed in with the seed. It will do no harm to put on the lime immediately after the manure if it is harrowed in at once.

Oyster Shells are frequently to be procured for a small price, and may be burned very cheaply. To burn them, make a heap of shells, and small wood; brush wood can be used if chopped into small lengths and packed close. Wood and shells are packed in layers, and the heap is covered with chips and small wood or brush. As it burns down, more brush is thrown upon the heap, and it may be left to smoulder for two days, when the fire will be burned out. A few barrels of water may be thrown upon a heap of 300 or 400 bushels, and it will slake into a fine powder; when it may be spread upon the field. In slaking the lime, the water should be thrown on gradually, lest too much be used and the lime become pasty.

Gas Lime can often be procured for the taking away, at any gas works. It is at least worth the cost of carting a moderate distance. But it should not be used while it is fresh. If hauled now it may be laid in heaps on land to be plowed in next spring or on land to be fall plowed, and spread either in the fall or spring. A few months' exposure is needed to free it from injurious gases, which pass off in time. After 3 or 4 months it becomes Carbonate of Lime, or mild lime, with a considerable portion of Sulphate of Lime (gypsum) mixed with it.

Swamp Lands.—No better time than the present offers for the clearing of swamp lands. To cut off the thick growth of weeds and coarse grass and sedges, and burn these on a dry windy day, will leave the surface clear, while it is dry enough to plow or break up. We find a disk harrow, such as the Nishwitz, or new modifications of, the old but excellent idea of, sharp steel disks, to be very effective for such work. The ground, when cut up fine, may be seeded to grass at once, with a good chance for a successful catch. On swamp lands, a good dressing of lime will be found generally useful.

Drains.—Cut these while the ground is dry. If they have been marked, or laid out previously, the work can be done now, at half the cost of doing it when the ground is full of water. This season is better than any other for reclaiming swamp meadows.

Digging Swamp Muck.—Muck for use in the stables and yards, can be dug during this month and next. With us contracts can be made at 15 cents a cubic yard, for muck laid upon the bank. This is the best way to get this work done, when the labor is hired. The excavation can be measured with ease and certainty. A cubic yard measures 3 feet each way—long, wide, and deep. The muck on the bank will dry, and become fine before winter.

Fodder Crops that have not been used, should be cut and cured for winter. Sweet Corn stalks, from which the ears have been pulled for market, should not be left to waste, but cut up and cured as soon as the crop is off. The ground may be plowed at once, and sown to White Turnips. There should be no wastes of fodder, or of ground, and every little saving that is possible, should be made.

White Turnips may be sown this month, and yield a valuable crop. The Cow-horn, White Norfolk, Grey-stone, and other quick growing varieties, will make a good growth, before the ground is frozen up.

Fall Fallowing.—Experience proves, every season, the wisdom of plowing as much as possible, for spring sowing. Early fall plowing, has the benefit of fallowing to some extent, and the earlier it is begun, the more advantages are derived from it; it is more beneficial on heavy land than on light, but light land cannot fail to be improved by it.

Mangels and Beets.—Root crops and field cabbages need frequent cultivation during this month, and up to the time when the rows become nearly closed by their growth. So long as the horse can pass along the rows the soil should be stirred deeply. Sugar-beets are sweeter the deeper they are covered in the ground; white sugar-beets may be earthed up, but mangels and globe beets do not need this;

mere stirring the soil is sufficient. Thin when needed, and pull all weeds that start in the rows.

Clover Seed.—Clover that was mown early for hay may be ready to cut for seed this month. If cut early, the sod may be prepared for wheat. A clover sod after the seed has been taken off furnishes rich soil for a wheat crop. The sod should be plowed with a jointer, such as the Syracuse Chilled Plow, and the ground well rolled; the surface may be then loosened up with a cultivator before sowing.

Wounds and Bruises in horses and cattle should be washed and dressed with some emollient application. The Veterinary Cosmoline, a preparation of crude petroleum, has proved an excellent dressing for damaged skin, sprains, or bruises, on horses, cattle and sheep, as well as for softening hard or contracted hoofs. It has been found to serve a useful purpose for mankind as well as for animals.

Horses.—A run at pasture at night will be useful for a team, but either the pasture should be good or the horses should receive a feed of grain before being turned out; pasture alone will not be sufficient for a tired horse that is kept at work every day.

Care of the Feet.—Work horses are subject to have dry and brittle hoofs while plowing on hot dry ground. Occasional washing and application of glycerine or Cosmoline to the moist hoofs will soften the horn and remedy the brittleness. At this season mischief is done by keeping old shoes on too long. It is necessary to remove shoes to accommodate the growth of the hoof; otherwise there is danger that the hoof may become bound.

Notes on Orchard and Garden Work.

Harvesting the maturing crops, and weed-killing, are the chief occupations of the month. The killing of weeds is of as much importance now as earlier in the season, and is mentioned with special emphasis, for the reason that it is so often neglected. The orchard, nursery rows, and garden, are often well tilled during the Spring and early Summer, but when August comes the weeds too often have it all their own way. This is partly due to the pressure of other work, but frequently to negligence. Too often, as soon as the crop is well on its way, the hoe and rake are hung up, and the weeds take possession of the ground and ripen their seeds in abundance for the next season's trouble. Clean culture is not possible unless the weeds are persistently killed throughout the whole season.

Orchard and Nursery.

Early apples, pears, etc., will be ready for market, and we wish that every one who sends fruit to distant markets could visit the places to which his produce goes. He would there learn by observation many things which he can not otherwise find out. It would not take the watchful producer long to see the importance of carefully sorting his fruit—he would learn that it is to his profit to have in most cases at least three grades, namely, "Extra," "No. 1," and a third sort, unfit to send to market and only to be used for feeding out at home. In seasons of scarcity a third grade may be marketed near home, but usually it does not pay.

Over-Ripe Fruit.—The visitor at the markets will learn the importance of picking his fruit before it begins to soften. This is especially to be guarded against with early sorts, both the character of the fruit and the weather prevent "dead ripe" fruit from keeping any length of time.

Packages.—While barrels are the most convenient packages for late apples, choice Early Apples sell better in half-barrels, crates, and baskets. The preferences of the market should be consulted in this respect. Much depends upon the size and shape of the package, as regards the care fruit will meet in handling during transportation. Use care in picking the fruit, and putting it into the package, to avoid bruising; the little extra time expended here will pay a large interest. Whatever the package—barrel, half-barrel, or crate, it should be so filled that considerable pressure is required to bring the cover into place. This is necessary to hold the fruit firmly, thus avoiding the bruising which would otherwise follow from shaking.

Early Pears require still greater care, as they ripen and decay so rapidly. They should be picked before they are at all mellow. Early Pears, like the late sorts, are better if ripened in the house.

Pack Honestly.—The success of a fruit grower depends upon solid reputation for honesty. Let every package be as represented, and like every other of its grade. This will insure the confidence of the commission merchants, the esteem of the consumers, a ready sale of the fruit, and an inward satisfaction.

Careful Pickers.—Let no one pick fruit who has no thought for the life of the tree, and the seasons that are to follow. We have seen orchards that looked, after the picking, as if a hail storm had visited it, the limbs were so torn and broken.

Insects.—Feed all the wind-falls containing the *Codling Moth* "worms" to the hogs, or let these have an occasional run in the orchard. The bands to catch the worms should be looked to every week, and the worms killed. *Borers* should be probed and killed with a wire. Some *Bark Lice* and other plant lice can be killed by a wash of strong soft soap.

Budding should be done as soon as the bark of the stock will raise easily, and the buds are woody and well matured. A keen, flat knife and the bast or inner bark of the Basswood are all that are necessary for the work. In the application of the ties see that the bud fits closely to the stock. An expert will put in 3,000 buds in a day.

How to Bud.—We can not repeat instructions for such operations every year. In the Notes for August, 1877, we gave directions for budding, illustrated by engravings, which, if carefully followed, would enable any intelligent person to perform the operation. This number may be had for 15 cents.

Seedlings of forest trees, especially Evergreens, require shading. If no other shade has been prepared, stick small leafy branches among them.

Young Trees.—A mulch will be of great value to newly set trees in this, the most trying month.

Fences around the nursery and orchard should be kept in good order; stray cattle may cause much destruction when they once get among the young trees, or even older ones when loaded with fruit.

The Fruit Garden.

Blackberries.—For home use the fruit should be fully ripe before picking, but for market pick earlier while firm. After fruiting clear out all old canes, and leave four of the strongest new ones for the next year, and keep these at six feet in hight by pinching off the tips.

Raspberries.—Cut out the old canes, and pinch the new growth when it is about four feet high.

Grapes.—If mildew makes its appearance give the vines a thorough dusting of sulphur, as directed last month. Cut out any bunches affected with the "black rot." Hand-pick beetles and caterpillars.

Strawberries.—Plants struck in pots and set this month, will bear the next season. Old beds should be well manured and kept clear of weeds.

Kitchen and Market Garden.

It is now that the well-planted and kept Kitchen Garden makes its value felt in abundant supplies of vegetables for the table. Though most vegetables are beyond serious injury from weeds, the various weeding implements should be kept at work in the garden. A weed going to seed now, means many hundred-fold of its kind for next year. If there is nothing on a strip where an early crop has been removed, let the cultivator run over it every few days, but it is better to sow such places, and keep all the ground in cultivation. Spinach may be sown, and turnips sown now will make a good crop.

Asparagus.—But little can be done now except to keep the large weeds pulled out.

Beans should not be hoed when the vines are wet, as it is said to make them rust. Plant Refugee for late crop, especially for pickling. Pinch the stems of Limas off when they reach the top of the pole.

Beets.—Keep hoeing and thinning, using the young plants for greens.

Cabbages and Cauliflowers.—Set now for late use. Destroy the "worms" by catching the butterfly; hand-picking, by brine sprinkled over the plants, or by the use of water heated to 180°.

Carrots must have clean culture. When too large to hoe, pull out large weeds that show themselves.

Celery.—If not set, should be put out at once; it will yet make a crop in well manured moist soil.

Corn.—The late crop should be cultivated and clear of weeds, and the soil kept open and mellow.

Cucumbers.—Cultivate the soil as long as the vines will allow it, and hand-pull the weeds afterwards. Gather for pickles when of the desired size. Some like them of the size of the forefinger, and others prefer them even smaller, but the yield will of course be less if picked of that size.

Egg Plants.—Keep well cultivated, and place straw beneath the fruit to keep it from the ground.

Endive.—Set plants for late crop. Tie up the leaves when ready to blanch.

Herbs should be cut while in early flower, made into bunches, and dried slowly in the shade.

Melons.—Those which set too late to ripen should be picked off. If the ground is mulched with straw just as the vines are beginning to run, it will save hoeing, and keep the fruit from the ground. If the fruit is occasionally turned it will ripen better. Musk melons are ripe when the stem separates from the fruit. A ripe water melon is known by the peculiar and characteristic sound when thumped; easier remembered than described.

Onions.—Harvest as soon as ripe, and when well dried, store in an airy place. Onion "sets" should be kept where they will not heat and decay.

Potatoes.—Dig the early crop as soon as the vines wither and die down. Burn the vines, as they may contain the potato-rot fungus. Market at once.

Seeds.—As a general thing it is cheaper and more convenient to get seeds of the regular seedsmen than to save them. But if any are saved, let them always be of the earliest, fairest, and best specimens.

Squashes.—Watch the vines for injurious insects. Pull out the weeds when you can not hoe any longer.

Sweet Potatoes.—Do not let the vines root at the joints, as numerous small potatoes will form there at the expense of large ones.

Tomatoes.—Destroy the large green worms by hand-picking. Provide a cheap frame of stakes and poles, or place straw under the vines, to keep the fruit up from the ground. Trim off the late branches and flower clusters, and thus throw all the nourishment into the fruit that is sure to ripen.

Flower Garden and Lawn.

If the weather is dry, watering in the flower garden will be a necessity. This can be done with most effect and comfort towards sundown. The weeds will always grow, and must be kept out with hoe and rake. *Care* is the *watchword* of the month. The beds should be kept in order by picking and trimming, especially if they are of the so-called foliage plants, and represent formal designs.

Bulbs of spring flowers should now be taken up.

Dahlias are to be secured to stout stakes firmly set in the ground. Cut off the old flowers as fast as they have faded away. Pick off grasshoppers.

Gladioluses will need stakes to the flower stalks.

Lawns and Edgings should be kept closely cut. Lawn mowers are so perfect now, that there is no excuse for not having a well kept lawn. Large weeds can be taken out with an old chisel fixed to a handle. Keep the drives clean by frequent raking, and occasionally use the hoe along the edges.

Greenhouse and Window Plants.

This should be the time for getting the greenhouse in good order for the incoming plants. Look well to the heating apparatus, that no trouble may arise here when the cold snaps of autumn come.—Wash the woodwork, and do the necessary painting. Get in a supply of pots, potting material, labels, and all other needful articles, before the busy time of autumn comes. It should be a general cleaning up time. Fumigate if it is necessary.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending July 11th*, 1879, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats
RECEIPTS.						
28 d's *this* m'th	341,000	2,987,000	5,101,000	196,000	312,000	1,171,000
27 d's *last* m'th	447,000	4,510,000	3,107,000	385,000	339,000	952,000
SALES.						
28 d's *this* m'th	456,000	8,148,000*	8,439,000*	289,000	——	1,393,000*
27 d's *last* m'th	502,000	10,763,000*	6,215,000	603,000	101,000	1,469,000*

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
RECEIPTS.						
28 days 1879	341,000	2,987,000	5,104,000	196,000	312,000	1,171,000
28 days 1878	382,000	4,907,000	3,962,000	490,000	261,000	1,187,000
SALES.						
28 days 1879	456,000	8,148,000	8,439,000	289,000	——	1,393,000
28 days 1878	476,000	6,518,000	5,151,000	570,000	98,000	1,956,000

3. *Stock of grain in store at New York.*

	Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.
	bush.	bush.	bush.	bush.	bush.	bush
July 7, '79	1,159,019	1,917,747	60,147	45,090	211,662	158,640
July 11, '78	1,591,132	720,784	138,852	174,000	207,769	668,075

4. *Exports from New York, Jan. 1, to July 10.*

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Peas.
	bbls.	bush.	bush.	bush.	bush.	bush.	bush.
'79	1,529,000	23,238,450	17,821,000	2,213,900	101,800	396,600	193,000
'78	1,299,200	22,978,000	14,317,700	2,220,600	1,512,300	1,302,300	290,000

5. *Tide-water Receipts at Albany, from opening of navigation to June 28:*

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.	Malt.
	bbls.	bush.	bush.	bush.	bush.	bush.	bush.
'79	1,300	2,935,600	3,032,500	573,200	9,100	163,600	92,800
'78	2,400	8,001,600	7,109,700	626,500	281,300	1,602,900	110,600
'77	2,300	1,261,800	4,111,100	133,100	310,700	728,200	175,8 0
'76	10,100	5,594,100	887,100	248,500	91,000	1,129,700	231,000
'75	17,200	4,295,800	1,214,800	54,400	——	782,300	423,308

CURRENT WHOLESALE PRICES.

	June 13.	July 11.
FLOUR—Super to Extra State	$3 40 @ 4 35	$3 50 @ 4 50
" Super to Extra South'n.	3 45 @ 6 75	3 50 @ 6 75
" Extra Genesee	4 40 @ 6 00	4 60 @ 6 25
" Superfine Western	3 40 @ 3 80	3 50 @ 3 90
" Extra Western	3 75 @ 8 75	3 90 @ 8 75
" " Minnesota	3 75 @ 8 75	4 00 @ 8 25
RYE FLOUR, Superfine	2 90 @ 3 50	2 90 @ 3 65
CORN-MEAL	1 90 @ 2 25	2 00 @ 2 55
OAT MEAL, ₱ bbl	2 75 @ 6 50	2 75 @ 6 00
WHEAT—All kinds of White	1 00 @ 1 18½	1 05 @ 1 21
" Red and Amber	95 @ 1 22	1 00 @ 1 22
" Spring	74 @ 1 06½	78 @ 1 15
CORN—Yellow	43¼@ 55	43½@ 52½
" White	45¾@ 51¾	45½@ 52
" Mixed	40 @ 44½	41 @ 45¾
OATS	36 @ 45	37 @ 46
RYE	59 @ 65½	61 @ 65
BARLEY	Nominal.	Nominal.
HAY—Bale, ₱ 100 lbs	80 @ 80	35 @ 85
STRAW, ₱ 100 lbs	35 @ 60	35 @ 65
COTTON—Middlings, ₱ lb	12¾@ 13	12¾@ 12¾
HOPS—Crop of 1878, ₱ lb	5 @ 12	6 @ 18
" " 1877, ₱ lb	2 @ 4	3 @ 5
" olds, ₱ lb	1 @ 2	2 @ 3
FEATHERS—Live Geese, ₱ lb	35 @ 47	35 @ 47
SEED—Clover, West. & St. ₱ lb	Nominal.	Nominal.
" Timothy, ₱ bushel	1 20 @ 1 37½	Nominal.
" Flax, ₱ bushel	Nominal.	Nominal.
TOBACCO, Kentucky, &c., ₱ lb	2¼@ 11¼	2¼@ 11¼
" Seed Leaf, ₱ lb	5 @ 40	5 @ 40
WOOL—Domestic Fleece, ₱ lb	20 @ 40	20 @ 40
" Domestic, pulled, ₱ lb	18 @ 36	18 @ 37
" California	10 @ 25	10 @ 30
TALLOW, ₱ lb	5¾@ 6	6 @ 6¾
OIL-CAKE—₱ ton	@29 00	29 00 @29 50
PORK—Mess, ₱ barrel	9 20 @10 25	9 50 @10 25
" Extra Prime, ₱ barrel	8 75 @ —	— @ —
BEEF—Extra mess	10 50 @11 50	10 50 @11 50
LARD, in trcs. & bbls, ₱ 100 lb	6 35 @ 6 85	6 10 @ 6 75
BUTTER—State, ₱ lb	5 @ 17	4 @ 15½
" Western, poor to f'cy, lb	4 @ 17	4 @ 15½
CHEESE	2 @ 7½	1 @ 6
EGGS—Fresh, ₱ dozen	10 @ 14	10 @ 13
POULTRY—Fowls, ₱ lb	8 @ 12	9 @ 13
" Chickens, ₱ lb	22 @ 35	16 @ 25
" Roosters, ₱ lb	4 @ 5	5 @ 7
Turkeys—₱ lb	8 @ 18	9 @ 12
Geese, ₱ pair	75 @ 2 00	87 @ 2 00
Ducks, ₱ pair	40 @ 70	40 @ 60
Capons, ₱ lb	20 @ 25	20 @ 25
SNIPE, per doz	40 @ 2 00	40 @ 2 25
PIGEONS, ₱ doz	25 @ 1 00	35 @ 2 00
PLOVER, ₱ doz	1 50 @ 1 75	1 75 @ 2 00
APPLES, ₱ barrel	1 00 @ 2 75	1 00 @ 2 50
STRAWBERRIES, ₱ quart	3 @ 10	5 @ 11
CHERRIES, ₱ lb	5 @ 12	4 @ 8
RASPBERRIES, ₱ qt	— @ —	2 @ 7
GOOSEBERRIES, ₱ bushel	— @ —	1 50 @ 1 75
CURRANTS, ₱ lb	— @ —	6 @ 10
BLACKBERRIES, ₱ qt	— @ —	4 @ 14
WHORTLEBERRIES, ₱ qt	— @ —	5 @ 8
PEACHES, ₱ half bush. crate	— @ —	1 50 @ 4 00
PLUMS, ₱ qt	— @ —	4 @ 12
POTATOES, ₱ bbl	2 25 @ 3 25	1 00 @ 3 50
" Sweet, ₱ bbl	2 75 @ 3 25	2 50 @ 3 75
TURNIPS ₱ bbl	1 50 @ 2 00	75 @ 1 25
" white, ₱ 100 bunches	2 75 @ 4 00	1 00 @ 2 50
TOMATOES, ₱ crate	1 25 @ 2 50	1 00 @ 1 50
RADISHES, new ₱ 100 bun	25 @ 50	15 @ 35
BEANS—₱ bushel	75 @ 1 50	1 00 @ 2 85
PEAS—Canada, in bond, ₱ bu	74 @ 75	72 @ 75
" new, ₱ bag	1 00 @ 1 50	75 @ 1 00
STRING BEANS, new, ₱ bag	1 00 @ 3 50	50 @ 1 25
BROOM-CORN	2 @ 6½	2½@ 6½
BEETS, new, ₱ 100 bunches	2 50 @ 4 00	1 00 @ 2 00
CABBAGES—₱ 100	2 00 @ 5 50	2 00 @ 5 00
CAULIFLOWER, ₱ doz	— @ —	75 @ 3 50
ONIONS—₱ bbl	— @ —	3 00 @ 4 00
" ₱ crate	75 @ 1 25	1 00 @ 1 75
SQUASH, ₱ crate	50 @ 75	— @ —
CUCUMBERS, ₱ crate	1 00 @ 2 25	25 @ 1 00
WATERMELONS, ₱ 100	— @ —	15 00 @30 00

Wide fluctuations have occurred, during the month, in several kinds of Produce, the dealings in which have been on a liberal scale. Breadstuffs have been in most request at variable prices, as influenced, in good part, by the current reports—foreign and domestic—relative to the position and outlook of the crops, weather, etc. Speculative manipulation, likewise, has had much to do with the shaping of values, particularly of Wheat. Toward the close, the market was unusually brisk and buoyant, especially for Wheat, which was advanced sharply, on reduced offerings, and a more urgent inquiry, largely from the export interest, stimulated by the more encouraging tenor of the market reports by cable, as reflecting the unfavorable crops and harvest prospects in Western Europe. Spring grades were very prominent in the transactions, and—besides other important operations—embraced one line of 1,000,000 bushels No. 2 Milwaukee, taken from recent speculative holders, for actual shipment, at a price not made public, but understood to have been relatively well up to the current market rate (previous to the notable rise of the last few days) for the specified grade, for actual withdrawal of stock from market, considering the magnitude of the line. No. 2 Red also formed important features in the movements. The several grades most in favor with buyers, however, wound up heavily at a reaction from the highest point of 2@4c. a bushel, on a pressure to sell, due to the improvement in the weather and crop prospects. Corn and Oats also met with a readier market at hardening prices, but left off irregularly. Rye, which was quite dull early in the month, attracted more attention near the close, and showed more firmness. A sample of new crop Jersey Rye was exhibited on 'Change, on the 7th inst.; quality deemed superior....Hog and Beef products have been moderately active, and firm, but closed weaker. Butter, Cheese, and Eggs quoted cheaper, on a moderate call for supplies... Hops advanced 1c. per lb., on a better inquiry and lighter offerings....Hay, Straw, and Tobacco in fair request at current quotations....Cotton has been offered more freely, leading to a decline, on a restricted movement.....Naval Stores, moderately sought after, closing weaker....Petroleum rallied slightly, on light offerings for early delivery, and a fairly active demand.... Wool opened buoyantly, on a pretty brisk inquiry; but closed rather tamely at the ruling prices....Ocean freights were depressed, on a more liberal supply of accommodation for early use, and moderately active call, chiefly from the Grain, Flour, Petroleum, Lumber, and Coal interests.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.
June 16	11,827	51	5,301	35,924	27,888
June 23	12,258	82	4,714	40,184	31,363
June 30	12,615	108	5,058	34,465	27,814
July 7	9,398	46	4,317	32,391	22,224
Total for 4 Weeks	45,648	287	18,850	142,964	109,287
do. *for prev. 4 Weeks*	42,594	200	21,225	126,824	135,215

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	11,412	72	4,712	35,741	27,347
do. do. *last Month*	10,648	65	5,306	31,706	34,804
do. do. *prev's Month*	9,976	64	4,667	22,670	34,482

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Larger Sales.	Aver.
June 16	7¼@10¼c.	8½@ 9¼c.	8¾c.
June 23	6¾@10¼c.	8½@ 9¼c.	9 c.
June 30	7 @10¼c.	8½@ 9¼c.	8¾c.
July 7	7 @10¼c.	8½@ 9¼c.	8¾c.

Beeves.—The market has tended steadily downwards until the close of our report, when a gain of ¼c. per lb. was made, trade being favored by a short supply, good cattle, and satisfactory weather for keeping meat. Sales were made at the close, however, at a reduction of ⅛c. per lb. from the prices of a month ago; there being a wide range in quality of stock, prices were irregular. Dry cows sold lowest, at 7c. per lb. for 54 lbs. to the cwt., while choice steers, for the supply of the watering places, brought 10¼c. per lb. for 57 lbs. to the cwt; 26 head of such steers, averaging 1,642 lbs., were taken by one butcher at the above price. Kentucky grass steers sold at 8@9c. per lb., to dress 54 to 56 lbs. to the cwt; corn-fed, 56 lbs., brought 9¼@9¾c. per lb. Dressed beef was in active demand, at 7½c. per lb. for good and 7¾c. per lb. for extra sides....**Cows.**—There has been but little demand for cows, and no fresh receipts came to hand for a week or ten days previous to the close of our report. Prices are steady, at $30 to $55 per head, according to quality... **Calves.**—Good veals have been in demand and sold readily, closing at an advance of ¼c. per lb. Buttermilk calves also met a ready sale at higher prices, viz., 2¼@3c. per lb. live weight; fed calves brought 3¾@4c per lb. live weight. Good to prime veals sold at 4½@6c. per lb., and extra good at 6¼@6½c. per lb. live weight.....**Sheep.**—The market, after an irregular course, has settled down at lower prices, although the trade has been brisk, and a promise of better prices was apparent at the close. Sales were made of poor to good butchers' sheep at 3¼@4¼c. per lb. alive; shipping sheep at 4¾@5c. per lb.; extra sheep were a little higher; lambs sold for 5@6½c. per lb... **Swine.**—The market has been dull and weak. Prices have been irregular, closing at 4@4¼c. per lb. for live of 150 to 180 lbs. Heavier hogs are very dull. No dressed hogs to be found on the market, and no prices are quoted.

The Horse Market.—The market for horses has been very quiet, and but little business has been done, excepting for shipment. A large number of work-horses have been exported for the foreign tram roads, and 28 coach horses were sent out in one week. These were exceptionally fine animals and are expected to open the way for more extensive business in this class of horses. Prices are so irregular that no quotations can be given.

Prices of Feed.

Bran, per ton	$16.00@$18.00
Middlings, per ton	19.00@ 20.00
Ground Feed, per ton	21.00@ 23.00
Linseed-oil-cake, western, per ton	35.00@ 40.00
Cotton-seed-cake, per ton	25.00@ —
Chandler's Scraps, per lb	2@ 3

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb	9 @9¼c.
Sulphate of Potash (potash 44 per cent) per lb	3 @3¼c.
do. do. (potash 27½ per cent) per lb	1¾@1¾c.
German Potash Salts (potash 12 to 15 p. c. p. ton	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb	2 @2¼c.
Nitrate of Soda, per lb	3¼c.@4¼c
Sulphate of Ammonia (25 per cent.), per lb	4½c.@4¾c.
Dried Blood (ammonia 18 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$56.50
do. do. Lobos, do. do.	47.50
do. do. guaranteed, ₱ ton, cargo K	56.00
do. do. rectified, per ton, 9.00 p. c.	65.00
do. do. do. do. 8.40 p. c.	51.00
Soluble Pacific Guano, ₱ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs	25.00
do. do. do. (light soils) per 1,000 lbs	25.00
do. do. do. "A" Brand, (for wheat) per 1,000 lbs	30.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal per ton	42.00
do. do. do. medium do.	36.00
do. do. do. dissolved do.	42.00
do. Cabbage and Cauliflower Manure per 1,000 lbs	23.00
do. Corn do. per 1,000 lbs	23.75
Stockbridge Corn Manure, per acre	20.00
" Potato do do	10.00
" Tobacco do do	50.00
" Rye do per ton	45.00
" Wheat do do	45.00
" Seeding Down Manure, per ton	40.00
" Turnip Manure, per ton	50.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
" Wheat Phosphate, per ton	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Whann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members: or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Bound Copies of volume 37, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Read the Advertising Columns.—Letters are daily received by the editors, asking where pigs, fowls, seeds, fertilizers, machinery, etc., can be procured. We consider all the information of this kind that is given in the advertising pages sufficient, if those needing anything will only look there; and can not find room to repeat what is already plainly told elsewhere. Every page of the *American Agriculturist*, including the covers, is interesting reading, and should all be carefully examined every month. In addition to looking after what one may want, the reading of what others have to say, in offering their wares, etc., starts up some new idea in the mind of the reader.—When writing to any advertiser, always tell him in what paper his advertisement was seen.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist*, (either English or German edition), including postage *prepaid* through, will be 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon the dollar at 4s. 2d.

The Coming Fairs.—While our list of announcements of fairs, from official sources, is larger than at this time in any former year, there is still great room for improvement in this respect. Our Fair-List is made up, in the first place from announcements sent by the officers of

the societies holding them; in the second place from the advertisements in the various papers. We would repeat our request to the secretaries and other officers of fairs of all kinds, to send the dates and place as soon as possible. If no printed circulars are issued, send a postal-card. Be sure and give State, County, Town, and dates.

Name the State.—One of the curiosities of fair show-bills is the frequent omission of the State. When we get a "broadsider," brilliant in red, green and black ink, of the Washington, Jefferson, or Adams County Fair, and find the name of the State omitted, we are puzzled, and a reference to the Gazetteer does not help the matter, as there are any number of counties of these names.

Houghton Farm—Doct. M. Miles.—It has been announced by some Western journals that Doct. Miles is engaged to conduct the experimental operations at Houghton Farm. This is a matter in which the readers of the *American Agriculturist* have an interest, and though it was not intended to allude to it in these columns until plans were matured and operations were well under way, yet as others have already given it publicity, we may, with propriety, say that the announcement referred to is true. It was stated last year that it was the intention of its proprietor to devote a share of Houghton Farm to agricultural experiments; owing to the difficulty of finding a proper person to take charge, the matter has for some time been in abeyance. In the engagement of Doct. Miles the most important point in the enterprise has been fixed. Through a long term as Professor of Agriculture at the Michigan Ag'l College, through his lectures in various parts of the country, as well as through his reports, his contributions to the agricultural press, and his valuable treatise on "Stock Breeding," he is as favorably as he is widely known. Doct. M. is one of the few who join a thoroughly practical knowledge of agriculture to high scientific acquirements, and we regard it as eminently fortunate, not only for Houghton Farm, but for the interests of agriculture in general, that his services have been secured. It would be premature to say anything at this time of the work proposed. The more important topic would be, the work that has been done, and of this the readers of the *American Agriculturist* will be informed in due time. All we need say now is, the work has been begun and is progressing under the most favorable conditions. Results will follow in time.

A Sample of Many.—The usefulness of the *American Agriculturist* is often attested in some such pleasant manner as the following. We might fill the paper with similar acknowledgements. "W.," of Mass., writes: "Though I am not a practical farmer, I am at all times interested in matters pertaining to agricultural pursuits; therefore I am a subscriber to, and a constant reader of, the *American Agriculturist*. I have received through its columns a good deal of practical information, some of which has been of advantage to me in my trade as a carpenter; hence, when I hear of a really good thing, I feel under some obligations to make it known to others, if I may through the columns of this valuable paper."

Peaches in Florida.—A correspondent at Waldo, Fla., noticing an item on the early shipment of peaches from Georgia, writes that they had fine ripe peaches on the Santa Fe Lake on May 14th., and that peaches have ripened there for several years in May. He says that a fine-flavored, good market peach is being largely planted in his vicinity, which should place the fruit in the New York market by June 1st, and at reasonable rates, if proper transportation facilities are afforded. He sent by mail, on June 25th, samples of a peach from Kennard's Fruit farm, near the Santa Fe Canal, which he says allows several pickings, from May 15th, and 20th, to June 30th, according to the season. The specimens reached us on July 1st. We take them to be the Honey peach, or a seedling of that variety, which reproduces itself very closely. They came in excellent order, and if not, as we suspect, the "Honey," their intense sweetness gives them a claim to be compared to honey.

A New Cherry.—"D. S.," Lancaster, Pa., sends specimens of a seedling cherry, which seems to possess excellent qualities. He states that it bears enormously, and continues for four weeks. As received by us, it is of about the size and appearance of "Coe's Transparent," with a very long and slender stem. It is of very rich quality, being acid enough for cooking, but not too much so for eating. It will no doubt prove a fine market fruit, as the specimens on the third day from the tree, showed no signs of decay. We are glad to see a renewed interest in the cherry, which has for several years, almost been a lost fruit, at least in the older States.

The Duty on Quinine.—The removal of the duty upon quinine has for some time been advocated. The great use made of it in malarious localities, where it is almost one of the necessaries of life, has induced some of the advocates of free Quinine to call the import tax upon it "Blood Money," and some of the papers have been very eloquent over the matter. At the recent extra session of Congress, Quinine was placed upon the list of articles admitted duty free, whereat the papers rejoiced that the fever-stricken sufferers would no longer pay tribute to a few wealthy manufacturers. The result was very different from that which the advocates of "free Quinine" looked for. The largest manufacturing house in this country, so soon as Quinine was put upon the free list, gave notice that they should discontinue its manufacture, whereupon the holders of the supply in this country at once advanced the price $1.50 per ounce. The advocates of free Quinine, in their opposition to "wealthy manufacturers," overlooked the speculators, and the immediate result of their efforts is to increase the cost of the drug by almost one-third. If the duty was "Blood Money," what is this advance? Political economy can hardly be called one of the exact sciences.

Sundry Humbugs.

When we advise our readers to do, or not to do, this or that, this advice is founded upon what seems to us to be the common sense and equity of the case. We are often applied to for advice in matters involving questions of law; this we can not give, as we make no pretence to legal knowledge. It often happens that an opinion given according to "common sense and equity" is not in accordance with law. This is so much the worse for the law, and still worse for the unfortunate persons who appeal to it, expecting to get justice. We have frequently described the tricks of the venders of various patent inventions and machines, who in one manner or another procure from those farmers and other persons who undertake to act as agents for the sale of their articles

NOTES WHICH ARE FRAUDULENT.

The victim, thinking he has signed a mere receipt or order for goods, is astonished to find that he has in a short time a note to pay. The chaps who took the note, signed as an order, sell it to a bank, or to some monied neighbor. If the victim refuses to pay the note, he is sued by the holder. It has frequently happened that the Courts have decided against the farmer, the law being in favor of the innocent holder of the note. Another fraud has been extensively practised in Iowa. The swindlers, sell some patent, or article, for a low price, take the buyer's note for $10, add another cypher, and sell the note for $100. When brought into the lower courts, these cases were decided in favor of the holders of the notes, as evidence of fraud could not be produced. One JOHN CLARK, of Marion Co., Iowa (Put his name in small capitals, Mr. Printer, as he deserves the honor), was not disposed to accept such a decision. He had given a note for $10; he did not cancel all blank spaces, nor fill up the blank designating where the note was payable, as he was told that an agent would be along to collect it when due. When the note came to maturity, it was found to be "raised" to $110—and made payable at a bank at Knoxville, Iowa. He was sued by the bank, and the Court decided, as the maker of the note did not fill the blank, the holder had the right to insert the place of payment, and that the raising of the note from $10 to $110 was a "breach of trust" (!) made possible by the negligence of the maker of the note.

SUCH A MONSTROUS DECISION,

Mr. John Clark could not abide by, and determined to see if all Courts were on the side of rascals, as against honest farmers, he carried the case to the Supreme Court of Iowa. Here there happened to be common-sense on the bench, and at once it was decided that, as the blanks on the note were partly filled, any tampering with or alteration of such note was

FORGERY—AND NOTHING LESS—

and that the innocent maker of the note should not suffer because the holder had bought a note that was forged. This decision, which we, who know little or nothing about law, can not see how it could be otherwise, will make the bankers and other buyers of notes careful as to the article they purchase. The Western papers speak of this decision as one of the most important made for years. How much trouble, how much litigation, how much loss would be avoided were our oft-repeated warning:

"FARMERS, BE CAREFUL WHAT YOU SIGN,"

regarded by every farmer in the country! In view of the fact that there are a large number of frauds organized with great ingenuity for the express purpose of preying upon farmers, and that the success of these, almost without exception, depends upon getting, upon one pretence or another, the signature of the farmer, we are warranted in advising every farmer (and indeed other readers) as an inflexible, invariable rule, to

PUT YOUR NAME TO NOTHING WHATEVER,

no matter whether it be called order, or receipt, or even your correct address. So sure as you write your name in any book, or on any scrap of paper in the hands of a stranger, you have taken a step which may lead to no end of trouble and great loss. *Don't write your name.* If the transaction can't be completed without that, let the transaction go. Give your written name to no stranger under any pretence whatever....Complaints now come from Kansas concerning a

"UNITED STATES HOME AND DOWER ASSOCIATION."

Last month mention was made of a similar Association in Pennsylvania. The circulars before us give no locality for this "United States Association," but it has agents in various parts of Kansas. This fact of no location, joined to that of a special appeal to clergymen, besides complaints from persons who have advanced money for loans, and after waiting six months have received none, make us think that this U. S. concern should be regarded with caution. One Postmaster in Kansas complains of being $45 out of pocket, and that there are a dozen others in the same State in a similar condition....We hear of

THE LIGHTNING RODDERS

in all directions; it reminds us of the old negro song:

"Some come in June, some in July,
But August brings de Blue-tailed-Fly,"

but the species of the genus Humbug, known as the Lightning (rod) Bug, knows not months. It comes with the early showers of April and buzzes about—stinging when it gets a chance, until frost comes. We can add nothing to our advice to let these Rodders and their Rods alone. If lightning rods are needed, there are makers, of skill and reputation, who can supply them. A correspondent in Wayne Co., Ind., writes that the Rodders have been in his town and "swindled several people out of more money than would supply them with the *American Agriculturist* during their whole life time"—which we do not doubt....It seems very odd to receive, after all we have said about lotteries, inquiries if some particular lottery is not safe. We can make but just one reply to such letters: Provided that lotteries are honestly conducted—which they seldom are, the chances are so much against the ticket holder that he is foolish to take the risk. We have just come across a new lottery scheme—to be sure, it is called a

"GRAND MAMMOTH CONCERT,"

and is alleged to be "In aid of the Nevada Building Association and Public Charities of Nevada." Virginia City has the misfortune to be the headquarters of the concern, the programme of which reads so like the Topeka and other earlier schemes that we should not be surprised to find the renowned Pattee at the bottom of this. The sending out of schemes has begun, and they will no doubt be everywhere. We can save many the trouble of writing to ask about this by giving them our advice in advance, which is to let all Lotteries, Gift-concerts, Distributions, or whatever the thing may be called, severely and entirely alone....Besides swindles especially for farmers, there are

SWINDLES FOR FARMERS' WIVES.

We learn from Cattaraugus Co., N. Y., that a couple of smooth-tongued chaps have been about, representing that they are makers of mattresses, for which they require *old* feathers; they propose to take away old feather beds and return them filled with new feathers, a sample of which they show. As strange as it may seem, some farmers' wives trusted these fellows with their beds, and are waiting yet—months after the appointed day for their new feathers. If "a bird in the hand is worth two in the bush," so is an old feather bed in hand worth two new ones that never come....Something new in the way of

FRUIT HUMBUGS

comes to us from Perry Co., Pa., where some chaps are taking orders for Apple-trees, grafted on the White Thorn, at 50c. each. Freedom from all kinds of insects, and early bearing, are the advantages claimed. Another novelty is a Grape which grows in a "tree-form" with a one-seeded fruit. Let both stay on the other side of the Canada border, where they are claimed to have originated....Ten or fifteen years ago our Humbug column gave each month several new schemes for

"SHOVING THE QUEER,"

the "professional" term for getting off counterfeit money. This business now and then makes a faint effort at revival, the majority of the circulars offering counterfeit money in plain language. These are schemes to entrap and swindle green-horns, for the chaps do not have any counterfeit money. The latest circular of this kind is a curious affair. It offers "Cigars of Green Tobacco," and has all the talk about making these "Cigars" that others apply to counterfeits. Then follow arrangements for

meetings, injunctions as to secrecy—a curious lot they are—and an injunction to "read the enclosed slip carefully." This slip, cut from a newspaper, gives an account of an arrest of a man for having some of this cigar money, but a bank officer pronounced it genuine and the man is discharged. As with the old style of "Queer" circulars, these of the Cigar stamp are signed with different names. We do not mention this as a warning to our readers, for no one can be swindled by these chaps who is not as big a rascal as they, but to show how this form of humbugging has altered within a few years..... We once knew an old gentleman who had a great fancy for attending auctions. He would buy all sorts of out of the way and useless things, such as others would not take for a gift, and send them to his barn. We once knew him to buy the pews of a church about to be torn down, and have them carted to that spacious barn. If any one questioned him as to his odd purchases his reply in effect would be: "It will come into use in seven years. Keep anything seven years and it will come out as good as new." We may say that to our knowledge the old pews, though not put into a church, answered a purpose "as good as new." We recently came across a humbug which called our old friend to mind, and made us wonder if there was any one who stored away played-out humbugs in a big barn, or other storehouse of rubbish, and brought them out "as good as new" at the end of seven years. It is just about seven years since that chap

STOPPED DIEING AT HOTELS,

and now some one has brought him out of the barn of things forgotten, and he dies "just as good as new." This dodge is old enough to be new to a majority of our readers, but it is a very well worn affair, and this time it appears with modifications. When it had its former run—and at one time it was worked very lively—the dear departed died at a New York hotel, which had no existence, and the keeper thereof told the story in much fewer words than the San Francisco landlord, who appears to be new at the business. This letter was directed to a gentleman in Attleborough, Mass., and it appears in the "Chronicle," a wide-awake paper of that place. The printed letter heading is:

HAMILTON HOUSE,
San Francisco, Cal.
P. O. Box 102, Station A. R. V. KINGSWELL.

The letter reads as follows:

SAN FRANCISCO, April 25th, 1879.

V. H. BLACKINGTON, Esq.,
North Attleborough, Bristol Co., Mass.

Dear Sir:—It is my painful duty to inform you that a stranger registered at this house as Mr. Blackington died of pneumonia on the morning of March 29th, after a short illness. We can find no one who knew him. But from among various memorandums found on his person your name and address is mentioned. This leads me to believe him to have been an acquaintance, at least. I have not written sooner, as I was in hopes that I could learn something more respecting him, but without avail. This course was necessary, inasmuch as I hold some valuable effects belonging to the deceased, which I must now make some disposition of as I am about closing out my business preparatory to a journey to Arizona, where I shall be too far out of the line of communication. Under the circumstances I feel that I shall be justified in sending the things to you. The deceased had but $50 on his person, which I permitted to be paid, to the attending physician and, for burial. The sum to which he was indebted to me is $30 for board and attendance. If you will forward that amount, I will, on the receipt of the same, express the things to you securely packed. Should the deceased prove a relative or friend, allow me to offer my sincere condolence, and assure you that everything was done for him that was possible.

Your best way to send to me would be to merely enclose the amount stated (thirty dollars) either in gold notes or greenbacks, together with any instructions you may wish to give, and address as below. An immediate answer will oblige, Yours very respectfully,

R. V. KINGSWELL,
P. O. Box 102, Station A. San Francisco, Cal.

This man if he didn't "know how to keep a hotel" any better that he knows how to write a humbug letter, had better shut up and go to Arizona. The chaps who died in New York seven years ago, used to have silver-mounted revolvers, a gold watch and chain, and lots of things. ....In medical matters we have a large budget, but all relate to the old dodge of

SENDING PRESCRIPTIONS FREE,

by those who have cures for Nervous Debility, Catarrh, and various unmentionable troubles. We have had a wide knowledge of these free prescriptions, and have found that in every case *save one*, they were absolutely fraudulent. They pretend to give the names of articles to be made up into a syrup, decoction, or other compound, but, in whole or in part, these

NAMES WERE ABSOLUTELY BOGUS,

that is, made up in imitation of scientific names, but in reality have no meaning, and do not belong to botany, medicine, or any other science. We make above one exception to the rule that all the prescriptions were nonsense. In just *one* case a genuine prescription is given, by a man calling himself a "Rev." He says that in view of the fact that some druggists do not have the ingredients, he has made arrangements with one Syracuse druggist in particular to put up the stuff for $3.50, and adds, "I can say of my own knowledge the price for which the remedy is sent, including the cost for putting it up, etc., is barely remunerative"—which for a "Rev." is—well—a little steep. A well known druggist in Mass. writes that he has the medicines in stock, and puts up the whole for $1—which leaves him a good margin of profit, and from our own knowledge of drugs, we should say that the chap who gets $3.50 has a good thing of it. The "Rev." says that the price $3.50 "is barely remunerative" for the "cost of putting it up, *etc.*" There's where it is. Our Massachusetts friends do not put in any *et cætera*. They can make $1 cover the cost of "putting it up," and leave a fair profit. The Syracuse chap finds $3.50 "barely remunerative," when besides the cost of "putting it up," there is the "*etc.*" What is this *et cætera*, that increases the cost by $2.50?—What is the *et cætera* to which the "Rev." man refers?—Can it be that "*etc.*" stands for the share of the $3.50, which the man of drugs pays to the "Rev." man?—This is a conundrum—we give it up.

The Kansas State Board of Agriculture issues a Quarterly Report; that for the first quarter of the present year was duly received, but we have been prevented from noticing it until now. As it is made up by Alfred Gray, the estimable Secretary of the Board, we knew in advance that it would be creditable, but we did not expect to find so much of interest to one not a resident of Kansas, as an examination shows to be the case. It is accompanied by a map, very minute as to details, but admirably clear, and must be of great value to every resident of the State, while the reports by counties upon the Diseases of Animals, Grasses, Fruit Prospects, Wheat, and other crops, must be most welcome to every farmer. Besides there are articles on Castor-Bean Culture, on Building-stones, Coal, and other geological products, and others of interest. The Report is not without its amusing feature; a newspaper writer over the name of "Eli Perkins," has in one of his letters warned emigrants, in effect, against "Drouthy Kansas." Mr. Perkins' "speculations" are met by an array of facts, presented with a pungency which must make Eli wish he had not touched a point upon which all Kansasians are sensitive above all others. We doubt if any older State is doing so much for its agriculture as Kansas.

The Colorado Beetle and Paris Green.—This pest has greatly mitigated its unwelcome presence this season. Now we should make an effort to finish him. The last brood will gather on the late potatoes, and if *every one* interested would exert himself, an end might practically be made of the insect. This has been an unfortunate season as regards accidents from the use of Paris Green. "Familiarity has bred contempt" for this dangerous substance, and there have been more horses, cows, pigs and fowls lost by poisoning, than ever before. There have been some curious accidents. A horse tied to a wagon in which was a can of Green, reached over, opened the can with his teeth, licked the poison, and died in a short time. A portion of a barrel of water, in which the Green had been mixed for application, was upset on a meadow and neglected. Cows pasturing on the field, ate the grass, and three died, and the others recovered with difficulty. A workman coming in to dinner, left the shaker, containing some "Greened" flour at the door-step, some fowls came, and pecked at the flour, when the man came out, the fowls lay dead. A calf chewed up a piece of paper, in which some Green had been wrapped, and which was thrown down carelessly, and blown about by the wind. The calf died. Such accidents as these, show that people have become careless. Carelessness always leads to loss, if not disaster, and carelessness with poisons is criminal.

Raspberry Rust.—"A Reader," W. Mill Creek, Pa., sends specimens of Raspberry leaves, which are of a bright orange color on the under side. This trouble is caused by a parasitic fungus, belonging to the Rust Tribe, and lives upon the juices of the Raspberry leaves. The bright color is due to a vast multitude of small, orange-colored spores, in forming which, the nourishment of the leaves is used up, and they soon wither and die.—A fuller account of a closely related fungus—"The Wheat Rust," is given elsewhere. If any one has tried a thorough application of the Flowers of Sulphur upon the first appearance of the Rust, we should like the results.

Rawle's Genet, Not "Janet."—Last month, p. 252, in a note upon this apple, we quoted "Downing's Fruits of America," for "Rawle's Janet," as the proper name. Mr. Charles Downing, in reference to this, writes us as follows: "For the proper spelling of this apple, I refer you to the report on nomenclature, by Dr. Wm. M. Howsley, of Leavenworth, Kansas, in the American Pomological Society's Transactions for 1871, page 74. The Dr. has thoroughly investigated the origin, history, etc., of Rawle's Genet, and also McAfee's Nonsuch, Large Striped Pearmain, and Fall Queen apples, and it would be well for those interested in Pomology, to carefully read the report."—As all who are interested in fruits and their names, may not have (and more's the pity,) the Transactions referred to, we abstract from the most interesting paper of Doct. Howsley, the following points. While Washington was President, and Jefferson Secretary of State, M. Genet was Minister from France. These dignitaries, (as dignitaries do to the present day), liked good things, and Jefferson, at Mr. Genet's dinner table, found apples, which he (G.) had sent him from France, and so admired them, that he (J.) procured cions of the variety from France, and Jefferson gave the cions to a Virginia nurseryman, Rawles, for propagation. There is much more of the story, but it is easy to see from this, that the name should be Genet; not "Janet."

Mole Plow.—"A. M.," Somerset Co., Pa. A mole plow may be made useful in heavy clay soil, by breaking up the subsoil, and opening a passage for the water in it to escape into permanent ditches, at the foot of the slope. But the effect is soon lost, and the plow must be used every year, to be of any considerable benefit. Light, sandy, or gravelly subsoils do not need draining, and to use a mole plow in them, would be labor thrown away. Miner's subsoil plow, is an excellent implement.

Crossing Poultry.—"W. S.," Clay Co., Mo. Crossing common poultry with pure bred cocks, is generally found beneficial, if the breed is well chosen. To cross Leghorns or Games, in the hope of getting large fowls, for instance, would lead to failure; and the egg producing fowls, such as Leghorns, Hamburgs, and Black Spanish, crossed on native hens, do not improve the kind at all. The best breed for improving common fowls, is the Light Brahma; this cross produces a large early maturing fowl, and good layers of large eggs.

To Fatten a Milking Cow.—"L. S. L.," Belvidere, Ill. Some cows that are milking, are difficult to fatten, as the food goes to milk, rather than fat. But fine corn-meal fed dry, will fatten a cow, and tend to dry up the milk. Give 4 quarts a day, in two feeds of 2 quarts each, for three or four days, then add a third feed of one quart at noon for a few days. Then gradually increase the quantity, until the cow will eat 6 or 8 quarts a day. If she does not fatten, or begin to fatten, then she is not one of the fattening kind. It will not be safe to stop milking, lest the exciting food may provoke fever and trouble with the udder.

Cough in a Cow.—"G. E. E.," Whitings, N. J. A cough may be caused by irritation of the air passages; by the effects of cold upon the lungs; by indigestion, and in young animals, by the presence of parasitic worms in the air passages. By neglect, a cough becomes chronic, and in cows, is apt to result in permanent disease of the lungs, which in course of time is fatal. General treatment for a cough, consists in giving laxative, and cooling medicines, such as Epsom Salts, in 8 to 12 oz. doses, Saltpetre, in 4 to 8 dram doses, and to apply Mustard paste to the throat or sides of the chest. Warm, soft food, and good nursing are beneficial.

Keeping Water Cool.—Water for the harvest-field can be kept cool a long while if put in an earthenware vessel wrapped by several folds of cloth, which should be kept wet. The water evaporates from the cloth and cools the vessel and the contents. Every time the jug is used, a little water can be spilled upon the surrounding cloth. Upon the same principle, the water vessels, in warm countries, are of porous, unglazed earthenware; the small portion of the water that oozes through them and evaporates from the surface, cools the remainder. In such countries these water jars are placed in the shade and in a current of air, a hint that should be heeded by those who use a cloth-covered vessel.

Treatment of a Worn-out Meadow.—Meadows that have been run down, become sod bound or covered with moss, sorrel, or other weeds, may be renovated without plowing. The old sod needs to be disturbed, but a thorough harrowing or a chopping of the surface with a disk harrow will disturb it sufficiently without plowing. Fresh seed is needed, and a dressing of lime may in many cases be all that is required in the way of a fertilizer. If it can be afforded, a moderate quantity of fine manure used as a top-dressing, and harrowed in just before sowing, will be of great benefit. The work may be done at any time before September, so that the grass and clover, the latter more particularly, should be well set before severe frosts occur. Orchard-Grass will thrive upon soils that are not rich enough for Timothy; but it is better to have the ground good enough for the latter even if the former is to be sown. Grass is a crop for which the soil can not be too rich, for if the growth is excessive it can be cut at any time and made into hay or fed green.

Muck.—The dry weather of late summer is the best time to get out a supply of this valuable substance.

Muck, when of the best quality, contains a large amount of nitrogen; and it is an excellent absorbent for liquid manures, and above all, is of great value in composting, as this process renders the elements of the muck available to the plant, while at the same time the muck prevents too rapid, and therefore wasteful, decomposition of the other materials of the compost heap.

Driving after Eating.—The digestion of a horse is governed by the same laws as that of a man, and as we know that it is not best for man to go at hard work the moment a hearty meal is eaten, so we should remember that a horse ought to have a little rest after his meal, while the stomach is most active in the processes of digestion. Many a good horse has been ruined by injudicious haste in working him with a full stomach.

Storing Hay.—When properly cured, hay keeps the best in a *large* mow in which it has been thoroughly packed. Hay thrown up loose on a scaffold loses that aroma and freshness which characterizes that from the center of a large mow. Hay does not demand the large spaces between the outside boards of many barns in order to preserve it. Put the boards close together and keep out the air and rain, and save the hay which would otherwise spoil by weather staining. It looks better, too.

Butter Not Gathering.—"L. B. K.," Hunterdon Co., N. J. The food has a great influence upon the milk. So has the condition of the cow. When the butter will not gather, but remains in the condition of a thick emulsion, it may sometimes be brought into order by throwing into the churn a gallon of cold water in which a handful or two of salt have been dissolved, and then operating the churn slowly to gather the butter. The cream may be improved in condition also by stirring a teaspoonful of salt in the jar in which it is kept. But to give the cows a daily feed of bran, or meal, if only one quart, is perhaps the best remedy, and its cost will be returned in the increase of butter. It pays to give this extra food even when cows are on pasture.

Sour Grass on a Swamp.—"P. T.," Maywood, N. J. Timothy will not grow on a swamp vigorously enough to crowd out the wild grass, although the tussocks have been cut off. The land should be thoroughly drained and well limed, 50 to 100 bushels per acre, and then, after a few years mowing, the Timothy will take the place of the sedges and keep it, if the drains are kept open. Manure will not help such land; lime will.

Cooking for a Few Cows.—"S." The practice of cooking food for cows is rarely followed now. It seems to have been more laborious than profitable. We would not advise it under any circumstances for 4 or even 10 cows. It may answer well for a larger number.

Harrow for Grass Seed.—"W. L.," Cresfield, Md. A light harrow should be used for covering grass seed. A flat plank drawn over the surface, will cover the seed sufficiently, and will smooth the surface. A brush harrow is an old fashioned and homely implement, but if well made, is both effective, and cheap.

Where Should the Forelock Go?—"H. D. M.," Somerset Co., Pa. The forelock may be placed under, or over the forehead band of the bridle. It is a matter of fancy. If the lock is short, it may go outside of the band: if it is long, it should go under. If long it may blow about, and annoy the eyes, and is therefore best under the band. There is no rule about it.

Seed Corn.—"A. R. S.," whose locality in Virginia we do not quite make out, in a letter giving an account of fair crop prospects, says: "There is much complaint, that seed corn does not grow," and very properly suggests, that this trouble may be avoided, by selecting corn for seed, and proper care of it afterwards. Corn taken at random from the crib in the spring, where it has been exposed to all weathers, can not give so good results as seed selected as our correspondent says: "Select at once, the earliest and best ears, and they will give an earlier and larger crop, than any from seed taken from the crib. He adds that: "Farmers will be surprised at the difference produced in their crop, by a careful selection of seed corn."

The Mass. Agricultural College.—We learn that the Hon. Chas. L. Flint, long the able Secretary of the Mass. State Board of Agriculture, has been elected to the Presidency of the College. We have not learned whether Mr. Flint accepts the position or not, but if it involves giving up the Secretaryship of the Board, we hope he will hesitate. Presidents are much more easy to find than good Secretaries.

Time to Cut Fodder-Corn.—If a crop of fodder-corn is worth the trouble of growing, it is certainly of sufficient importance to be properly harvested. The corn plant, like every other, starts with a view, so to speak, to the reproduction of its kind—the formation of seed—and all its functions tend toward this end. We may divide the life of the corn plant into three distinct stages—*germination*, or getting established; *assimilation*, or the preparation of food material, and *seeding*, or the ripening of the seed or grain. Up to the time that seed begins to form it is engaged in rapidly collecting materials out of which to make and perfect the seed, but this work gradually diminishes, and when the corn is full grown no food is being gathered. Besides the fact that the nourishment passes from the leaves into the ear, where it hardens and becomes partially indigestible, the soluble substances of the stalk are also changed into hard woody fibre to make it rigid and capable of bearing the ear. To get, therefore, the full benefit of the crop, it should be sowed thin enough so that each plant can have a good wholesome and natural growth, and then cut it *just* as that growth is finished.

Burning Straw Stacks.—This is one of the swiftest methods of destroying a large amount of valuable organic matter which, when used as bedding and an absorbent of liquid manure, is of great importance.

Multiplication of Weeds.—It has been found by careful and patient counting of the number of perfect seeds produced in a number of seed pods, and then counting the number of mature pods, that on a single plant of Purslane (*Portulaca oleracea*) there will be *one million* seeds matured. This will furnish a seed for every square foot of ground on 23 *acres*. Suppose each of these plants of the second generation does as well as the single parent, we will have the enormous sum of 1,000,000,000,000, as the seeds of the second generation from a single plant, or a seed for every square foot of 23,000,000 acres.

Hurrying the Cows.—If moderation is needed anywhere on the farm, it is in the driving of cows. A boy, or a dog, that will hurry, and therefore worry, the cows as they are taken to and from the pasture should be—to put it mildly—attended to. Boys, do not run the cows home, even if it is getting late, especially if it is on the way to the yard and their udders are full of milk.

Raising Water for Irrigation.—"G. S.," Salt Lake City. There is no wheel made, that will run by means of the water raised by it. The water-wheels in use at the lead mines in the Isle of Man, (England,) are ordinary over-shot wheels, but of extraordinary diameter; one of them is 60 feet in diameter, with only 8 feet buckets; the streams in that little island are small, but have generally a great fall. Unless there is a great quantity of water to waste, a water-wheel will be found far from economical, and a wind-mill will be both cheaper to begin with, and waste no water. A recently published book on Irrigation for the Farm, Garden, and Orchard, gives all information on this, and other points in irrigation. It can be had at this office, for $1.50.

A Horse Breaking Down.—"F. W. S.," Summerville, Ga. "Breaking down," consists of a severe sprain of the suspensory ligament, by which the fetlock joint loses support in bad cases, and comes to the ground. The treatment consists of bandages, blistering, and rest; but it is so serious that the services of a competent veterinary surgeon should be procured.

Boys at the Fairs.—There is no public gathering of people and things so pleasant and profitable to the farmer boy as a fair. Many a youthful farmer has had his interest in improved stock, new machinery, and fine fruits kindled by attending such an exhibition. By all means take the boys (and girls too) to the fairs.

Rule in Buying Live Stock.—Mr. Wm. McCullock who, of late, has been buying Shorthorns so largely in England, to establish a herd in Australia, gives as his rule in purchasing animals: "Pedigree first, beast afterwards; and unless both were good, I did not buy." This puts the matter in a nut-shell.

Salt to Prevent Garget.—"O. W. W.," Sterling, Mass., writes: "A friend having a herd of cows was considerably troubled with Garget. A portion of the bag would become inflamed and hard, the milk from that portion thick and ropy, and finally the inflamed portion would become useless. Four or five years ago he commenced giving to each cow, in her stall, a small handful of salt, every morning before milking, and has not had a single case of garget since he commenced the practice. He says he does not know that the salt prevents the Garget, but is inclined to think it does. His cows seem to be anxious for their salt the first thing in the morning. Not long since he omitted to give the usual ration of salt before milking, and the first cow he sat down to was so uneasy that he was reminded of the neglect, and gave the cows their salt, after which there was no trouble. The reason he commenced to give the cows salt in their mangers was, because when he put salt in any receptacle where the cows had it in common, only the stronger of the herd would get any, these driving away the weaker ones, which would soon learn that the salt was not for them, and cease all attempts to get any.

Rye, for Soiling in early spring, should, in the Northern States, be sown late in August or early in September, on rich, well drained soil. With proper care in cutting it before it heads out, it will spring up again, and in this way three or four cuttings can be had at intervals of a few weeks, before other soiling crops are ready.

Rabbits.—Persons having Rabbits of choice breeds for sale, keep the secret remarkably well. During the past six months we have had numerous inquiries asking where Rabbits of this or that breed can be had, but have been unable to return a satisfactory answer. Should any breeder advertise that he has the animals, people would find it out and get his pets away from him.—*Moral:* If you want to *keep* Rabbits, don't let any one know that you have them, but if they are *kept for sale*, advertise.

Lucerne for Soiling.—This clover-like plant takes a deep root and equals clover in the nutritious character of its herbage, while the yield, under proper treatment, is considerably greater. It stands a drouth better than clover, and will grow on dry and porous soil.

Feeding Pigs.—It is very important that pigs be fed with a plenty of nutritious food while they are young. If they are let to "run" for their living at this age, they will be stunted, and the profits of pork raising small.

Iron in Grain.—The use of iron wire in binding grain in self-binding reapers, has caused a new trouble for the millers. With all ordinary care in threshing, some bits of wire will get among the grain, and these make a deal of trouble at the flouring mill. The iron is separated from the wheat by the simple device of placing a magnet in the grain-spout, where it at once arrests the iron.

Soiling saves fences, one of the most expensive features of ordinary farming; prevents the seeding of weeds; and keeps stock from trampling down and wasting more fodder than they eat. It doubles the amount of stock which can be kept on any given amount of land, and there is a vast increase in the amount of valuable manure that may be saved. There is some additional labor, but the returns are so much greater, that Soiling is *the* system of the present as well as future agriculture.

The Largest Wheat Farm on the globe is along the Red River, in Dakota, near the town of Fargo. It contains 40,000 acres, and gives an average yield of 25 bushels per acre. The owner does not walk over it before breakfast.

Root Crops vs. Fallow.—The old idea of renovating the soil by a season of rest, after two or more similar and exhaustive crops have been grown, is fast going out of date, and the root crop is taking the place of the fallow. This change is a great improvement, and means a mixed husbandry and rotation of crops, in place of the single crop system, which should be practised only in a new country, and perhaps not always there.

Drain Tiles.—As so many farmers are laying down tile, it may be well to remind our readers, that there is a choice even in drain tiles; that there are good, bad, and indifferent tiles, and some worse than useless. A whole drain system, costing hundreds of dollars may be spoiled, and made useless by one bad tile; just as a chain or rope may be worthless, because of one weak place. But the rope or chain may be repaired without much trouble; while to find the defective tile, may require the undoing of the whole costly work. If a tile has a hole clear through it, it may perhaps be supposed to be all right: without considering the shape of that hole. In the drying, some tiles will lose their shape, some will flatten out a little and become oval, and in the burning, some will curve. Every tile that is not perfectly round, quite straight, smooth and square-edged, smooth within, free from lime pebbles, and thoroughly well burned, so that two will ring sharply, when struck together, should be remorselessly rejected. No thought of the makers or dealers interest should be entertained; it were better even to pay twice for defective tiles, and throw them away, than to use them. But that is wasting one's rights and money. No dealer should deliver imperfect tiles, and when one buys, he should stipulate to discard every unserviceable one, and do this without hesitation.

Paint and Putty cover up a multitude of defects. But they are very useful also in preserving machines, implements, and vehicles. There is no better time than now, when everything is dry, to fill up open cracks with putty, and cover wood and iron work with a coat of paint. A small quantity of varnish in the paint will much improve it, with but little addition to the cost.

Dairying in a Warm Climate.—"H. Q. A.," Beaufort Co., S. C. Where the climate is warm, and there is no cool spring, the following method can be used for setting milk. Dig a well as deep as possible, and fit a pump in it, to allow the water to be frequently agitated and changed, and thus keep it fresh. Procure a few deep pails with covers, such as are used in the Cooley Creamery, and attach fastenings to hold down the covers when the pails are submerged. The can should be weighted to sink it in the water. (See *American Agriculturist*, July, 1879, page 265.) Lower the cans with the milk into the well and to the bottom where the water will be the coolest. The cream may be cooled and the butter hardened in the same manner. A porous felt used for boiler coverings would answer the purpose of a non-conductor, and when wetted, as a cooler, by evaporation.

Concrete Buildings.—"J. A. T.," Britt, Iowa. Cellar walls and root houses may be made of concrete with advantage. Directions for this work were given in November, 1874, which number can be had for 15 cents.

To Destroy Ants.—Since the note on page 310 was written, we have seen two remedies suggested in the European journals. A correspondent of the "Gardeners' Chronicle" suggests to those troubled with ants "to get their druggist to dissolve some Arsenic in Honey, and place the mixture on pieces of slate or glass, where the ants will eat it and die. Be sure that the Arsenic is properly mixed with the honey [and be sure to keep children out of the way]" adds the Editor. As Arsenic is very slightly soluble, we would suggest, to those who wish to try this, the use of the Arsenite of Potassa as preferable to Arsenic....The same journal quotes the German "*Ill. Garten Zeitung*" as saying that dilute Carbolic Acid is perfectly efficacious. One part of Carbolic Acid is mixed with 100 parts of Water, thoroughly stirred repeatedly during 24 hours, and any scum that may rise to the surface carefully removed. This mixture is said to kill the ants and not injure vegetation, and may be poured freely into their nests.

Still More About Ants.—"H. L.," Kankakee, Ill., writes in full his interesting experience with ants in his lawn, grapery, and elsewhere, from which we condense the following. He had tried hot water, kerosene, and sugar poisoned with Paris Green, without much success. Last year he had about 30 chickens of choice breeds, which were allowed to run at large in the grapery, and on a portion of the lawn. By mid-summer, he found that the ant-hills in the vicinity of the coops had disappeared, and observation showed, that the chicks would "gobble up" the ants whenever one appeared. He moved the coops to other parts of the grounds, where there were ant-hills, opened the hills, and both ants and their pupæ were greedily devoured, the pupæ being preferred. The experiment was repeated this year; some 30 or 40 chickens were hatched expressly as ant-killers, and at the time of writing—the end of June—"not an ant-hill can be found on my premises," though the ants are still troublesome in the house, where the chicken remedy can not be applied.....Several correspondents write that they have killed ants, by pouring kerosene into their holes. "F. D.," of Jacksonville, Fla., says that he thus got rid of a small black ant, with a poisonous bite, by the use of kerosene....."F. K.," Watertown, Mass., writes that a few years ago, ants appeared on a bank in the front of his house, and completely ruined about 15 feet of it. After trying every suggested remedy, without good results, he removed the sod from a portion of the bank infested by the ants, and thoroughly sprinkled the ground with benzine, applying it with a watering-pot. New sods were laid, and he has had no trouble since. We thing that benzine will destroy vegetable, as well as animal life, but the liquid is exceedingly volatile, and probably there was time between its application and the laying of the new sod, for it to evaporate....J. A. Fetters, a well known small fruit nurseryman, Lancaster, O., writes that if salt is sown broadcast, lawns will not be infested by either ants or grubs. The application should be repeated after a rain. Mr. F. says that salt is especially useful where bees are troubled by ants, and that he finds it beneficial to protect his strawberries from the white grub as well as ants. Mr. F. does not state the quantity, but says "sow broadcast as for wheat." As from 5 to 20 bushels to the acre have been used upon wheat, this is not very definite...."J. L. McC.," Wood Co., Ohio, sends his method of catching ants; he says: "Soak sponges in sweetened water, squeeze out, sprinkle with granulated sugar, and place them near the ants' nests. When the insects fill up the sponges, which they will do very soon, kill the ants by dropping the sponges into boiling hot water; prepare the sponge traps as before, and set again. I have tried this method and know that it is sure death to ants."...."H. O.," Waterloo, Ill., gives a sort of 4th of July method of disposing of ants. He says: "Get a bunch of fire-crackers (or more if needed), take a spade and push it into a hill, then pry the spade sideways, to make a cavity wide enough for the bunch to drop into it, light the fuse to the crackers, and you will witness a scene both amusing and useful."

"Is Higher Farming a Remedy for Lower Prices?" is the title of a lecture before the "East Berwickshire Agricultural Association," by J. B. Lawes, LL. D., F. R. S., etc., of Rothamsted. Successive bad seasons and immense importations, together with the higher price paid for labor, have paralyzed the English farmer, and led him to inquire: What next? Dr. Lawes presents no specific for these troubles, but inquires into the advice, so frequently given, of meeting lower prices by increased production. It is possible to greatly increase the production on a large part of the land, but to do this there must be an importation of manures and fertilizers from without—and it is this method which he understands by "high farming," when the farm becomes a factory where imported manures are made into food, just as wool and cotton are manufactured into cloth. Excepting the extra cost of the manures, the charges for growing a crop do not increase very greatly; and if the amount of produce bear a constant ratio to the fertilizers applied, then it would appear that high farming would be a remedy for low prices. But three times the quantity of manure does not bring three times the amount of produce. Beyond a certain limit, the manure costs more than the increase of the crop. It is a common fallacy that, in feeding stock, the cost of the food will be covered by the meat and other products sold, and the manure costs nothing. In a true account something must be charged to the manure.—The bulk of the paper is given to tables and the discussion of his experiments at Rothamsted, proving the truth of the statements made above; that the increase of the crop does not keep pace with the increase in the amount of manure applied to the land; and also, that manure made on the farm costs money. "So far, however, as increased production is to be attained by the exercise of freedom, intelligence, and economy in management, so as to get the maximum amount and value of produce from the manure that is applied to the land, and the maximum amount and value of meat and manure for the outlay in store-stock and in food, increased production is a necessity of the times and would prove the best remedy for lower prices of farm produce."

(*Basket Items continued on page* 319.)

Wheat Insects: The Hessian Fly—The Midge.

The U. S. Entomological Commission, have in hand an investigation, which is of vital importance to every wheat-grower in the whole country. The first step towards the abatement of an insect pest, is to learn its present exfent and condition,—in fact all about it, that observation can teach. This investigation, while made by the Commission, is in the special charge of Prof. A. S. Packard, Jr., and those who know his thoroughness, will feel sure that it could not be in better hands. But for one man to visit the principal wheat regions of the country, and make observations in each, would require years. Prof. Packard must have help, and the farmers, for whose benefit the work is undertaken, are those who can best help him. Even those living where the Fly and the Midge are unknown, should not be indifferent to the work. Exemption this year, is no assurance of a like freedom next year, and the first appearance in a locality, of destructive insects, is an important part of their history. The Commission has issued a circular, asking help from the farmers, and we show our appreciation of its importance, by giving space to it. In doing this, we ask our readers to give it a careful perusal, for it is very instructive to all wheat-growers, and then to lend their aid to the work in the manner there indicated.

The circular says: "In brief, the habits of the Hessian Fly are as follows: In May or June two or three small, reddish-white maggots may be found imbedded in the crown of the roots of the wheat, at or near the surface of the soil, causing the stalks and leaves to wither and die; the maggots harden, turn brown, then resembling a flax-seed, and change into little *black* midges with *smoky* wings, half the size of a mosquito, which appear in spring and autumn, and lay from twenty to thirty eggs in a crease in the leaf of the young plant. Specimens of the fly may be obtained by sweeping the wheat when three or four inches high, with a gauze net. Please send me specimens of the fly, eggs, maggot and "flax-seed," in vials of alcohol, with notes as to the date when found, and full information as to the insect enemies and parasites.

The *Wheat Midge* is apt to be confounded with the Hessian Fly. It is a small, mosquito-like fly, *orange yellow*, with clear wings, which hovers over fields of young wheat in June. It attacks the heads of the wheat, laying its eggs when the wheat is in blossom. On hatching, the maggots crowd around the young kernels of wheat, causing them to become shrivelled. The maggots in July and August descend into the ground, spinning a round cocoon smaller than a mustard seed, remaining an inch below the surface till the following June.

Information regarding the following topics is respectfully solicited; to be forwarded at the close of the season:

1. When, where, and how are the eggs deposited?
2. When does the maggot appear?
3. When is the "flax-seed" state of the Hessian Fly, or the seed-like cocoons of the Wheat Midge assumed?
4. At what date do the Midges appear in spring and autumn?
5. Look for minute parasites in the eggs and maggots. They may be bred by placing the eggs and maggots with the wheat in bottles covered with gauze, and the parasitic flies preserved in vials of alcohol.
6. Statistics as to abundance and losses in your town.
7. State the best preventive remedies, as deep plowing or burning in the fall, or the rotation of crops.

Specimens of the wheat affected by these insects, and of the eggs, maggots, and flies, together with their parasites, in alcohol, are requested. When mailed, the alcohol can be poured out, and cotton soaked in alcohol will keep the specimens wet until received. Packed in a tin box they can be sent through the mail, to A. S. Packard, Jr., *Providence, R. I.*"

Cotton-Worm.—Important Investigation.

The ravages of the "Cotton-worm" (so-called), which, by seriously diminishing the cotton product, affect not only the cotton grower, but some of the most important industries of the country. In view of these facts, Congress made a special appropriation for a thorough investigation of the habits of this insect, in order that its destructive work may be checked. For reasons, stated in another column, Congress has transferred the appropriation from the Department of Agriculture to the Entomological Commission. The Commission have placed this investigation under the special charge of Prof. C. V. Riley, under whom it was commenced while he held a position in the Dept. of Agriculture. Prof. R. has for some time been in the field, our last letter from him being dated Marion, Ala., in which he incloses a new circular issued by the Commission. As it is important that the request to cultivators for aid in the work should reach every grower of cotton, we give the questions to which replies are wished, with the remark that it is desirable that the answers to these be made *whatever previous circular* may have been replied to.

"1. During what year was cotton first grown in your State, county, or locality?

2. How many years elapsed after cotton first began to be grown, before the worm began to work upon it?
3. Is the worm most dreaded after a mild or after a severe winter?
4. Do wet or dry summers favor its multiplication?
5. What is the earliest date at which you have known the worm to appear in spring?
6. In what locations does it most often first appear?
7. What is your experience, and what are your views, as to the winter habits of the insect?
8. What natural enemies of the worm among birds, quadrupeds, or insects, are you familiar with?
9. What has been the result of the efforts to allure and destroy the moths, and what methods have proved most satisfactory? Give your estimate of the relative value for this purpose of poisoned sugar, molasses and vinegar, or other poisonous substances, and fires.
10. Are the moths most attracted to sweetened substances when smeared upon trees, boards, etc., or when contained in vessels in or near which lamps may be lighted?
11. Are any flowers known to be attractive to the moth? If so, specify them and their season of blooming.
12. What do you know, from your own observation, of the influence of jute grown near or with the cotton?
13. Has anything been found more generally useful and applicable, or cheaper, than the use of the Paris Green mixture, or of Arsenic in some form, to destroy the worms?
14. Have you known of any injurious effects following the use of this poison, either to the plant, to man, or to animals?
15. State what you consider the best and most effective method of destroying the worms in your section.
16. State the cost per acre of protecting a crop by the best means employed.

Correspondents will confer a favor by numbering the replies to correspond with the questions, and by writing on but one side of the paper.

Prof. Riley will be glad to receive figures, either photographs, or drawings, of machines or contrivances employed for the wholesale use of the Paris Green mixture, either in the fluid state or as a powder; or any other kinds of machines or traps employed for the destruction of the insect. Models of such are still more desirable, and may be sent by express, unpaid, to the headquarters of the Commission. Correspondence is solicited whenever any expense must attend the carrying out of these requests, in order that authority may be given to make

the necessary outlay and thus insure the refunding of the amount. Replies should be sent before October next." All communications should be addressed to Chas. V. Riley, Chief U. S. Entomological Commission, Department of the Interior, Washington, D. C.

The Entomological Commission—The Department of Agriculture.

Congress "builded wiser than it knew" when it established the "Entomological Commission," primarily to investigate the Rocky Mountain Locust or Grasshopper. The Governors of the Locust-ravaged States applied to Congress for relief; it was understood that the Department of Agriculture under its then Commissioner could do nothing, and this opinion was manifested by establishing a Special Commission under the Department of the Interior. This Commission consists of the well known entomologists, Prof. C. V. Riley, Prof. A. S. Packard, Jr., and Cyrus Thomas, Esq., and much good work was done, as the reports show. When the Dept. of Agriculture had a new (and novel) Commissioner, and he, in an interval of good sense, appointed Prof. Riley to the charge of the entomological work, it was felt that the Dept. was equal to any entomological investigation that might come before it. Hence when an investigation of the Cotton-worm was ordered, the appropriation was placed in charge of the Dept. of Agriculture, and the work was actually begun, by Prof. Riley, as the Entomologist of the Dept. As stated some months ago, Prof. Riley, finding his usefulness interfered with, resigned his position in May last. But by getting away from the Dept. the country did not lose his services. Fortunately the time for which the Entomological Commission was established has not expired, and so long as it continues to work for the benefit of the farmers of the country it will no doubt be continued. So soon as Prof. Riley left, Congress expressed its opinion of the Dept. of Agriculture by transferring this Cotton-worm appropriation to the Entomological Commission, of which Prof. R. was the Chief. This Cotton-worm investigation, concerning which more will be found elsewhere, and the proposed investigation of wheat insects, also noted in another place, show that the Commission has planned for work, the results of which can not fail to be of the greatest value both North and South. But isn't it funny, to have a nominal Department of Agriculture, and put out some of its most important work to a Special Commission?

American Products in England—Prizes for Our Butter and Honey.

The great Dairy Exhibition held in New York in Dec. last, had its interest greatly enhanced by a remarkable collection of rare and curious cheeses from various foreign countries. This contribution was made by Messrs. H. K. & F. B. Thurber & Co., of this city, and the same firm is doing a good service in making American products known abroad. Not only have our dairy products been sold in England as English, but a large number of peculiarly American articles, such as canned and dried fruits and vegetables, the trade being wholly in English hands, had their brands and labels so changed that the consumer bought them as English products. As the farmer is directly or indirectly concerned in the production of these articles, our readers will be glad to know that they are hereafter to be sold as American, and upon their own merits. The Messrs. Thurber have opened a branch in London, for the purpose of making American goods known abroad. One step towards bringing American products into prominence was in entering American Butter and American Honey for competition at the exhibition of the Royal Agricultural Society. In a note to the Editor, dated July 2d, they say:—"We have just received a cable dispatch from our London office, stating that the highest prize for American Butter at the Royal Agricultural Exhibition, held in London, beginning June 30th, had been awarded to butter made by John S. Murray, Delhi, N. Y., and that the second prize was taken by butter made by John Stewart, Anamosa, Iowa, both of whom were represented by our firm; and also that the highest prize for honey had been awarded to American Honey, exhibited by our firm. The exhibition of the Royal Agricultural Society this year was of more than usual importance, owing to the fact that it was open to the productions of all the world, giving it an international character, which previous exhibitions of the Society had not had. We have not yet heard whether other branches of American food products were on exhibition or not, as Honey and Butter were the only two articles exhibited by us. It is to be hoped, however, that the great staples in the cereal and provision lines were represented, as prizes taken at these exhibitions bring the fine quality of American productions to the attention of consumers, create a demand, and thus help American producers to obtain a better price for their products than they otherwise would have been able to get."

Editorial Correspondence—Notes by the Way.

[Mr. Orange Judd left home the middle of June for a somewhat extended tour among our Readers, particularly at the West,—not so much to "write up" his journeyings, as to mingle with practical men, observe and talk over their "ways and means," their modes of culture, etc. We give below a first installment from his memorandum book of Notes by the Way.—Eds.]

Crop Prospects.

Burlington, Iowa, July.—Reasoning from analogy—from the "nature of things,"—I have not looked for very good crops generally, in our country, during 1879. After two successive years of productiveness considerably above the average, taking the country as a whole, we could hardly expect a third good year. Yet, judging from what I have seen, in a journey of over 1,200 miles, by daylight, between N. Y. City and here, through parts of Southern New York, Northern Pennsylvania, Ohio, and Indiana, and Central Illinois, the outlook is certainly very encouraging. Farmers have yet, perhaps, to run the gauntlet of unfavorable harvest weather and early frosts; but from careful, constant observation, and diligent inquiry, I gather that the present prospect through the region referred to is quite as good as at this time last year. Leaving the cars on the "Western Reserve" of Ohio, I rode many miles with and among the farmers, and found them in good spirits. The Wheat fields show a fair to heavy straw, with heads well developed. Plenty of fields promise 20 to 30 bushels per acre. The Hay crop is fair, not a heavy bottom, owing to lack of early rain, but thickening up now, and pushing forward well. I noticed considerable old hay, in barns and stacks—now selling at the farm for $6 to $9 per ton, according to quality. Oats look finely, as a rule. The Corn is small as yet, owing to late planting, but it has a healthy look, and with a continuance of the present favorable weather, wheat, corn, oats, and potatoes, will be fully an average crop, or better. The above remarks apply also to Northern Indiana and to Illinois, in the counties crossed between Chicago and Burlington, and so far as I could learn northward and southward of this line. An intelligent observer at Mendota, and another at Galesburg, Ill., agreed in saying that "we usually have good farm crops *hereabouts*, and this year they promise excellently, except that grass is a little short."—I have just talked with the enterprising Editors of the "Burlington Hawkeye," who on Saturday received direct special telegraph reports from over seventy localities in Southern Iowa, and Southern and Western Illinois. While there are exceptional unfavorable local accounts, the general report is in the highest degree satisfactory. "The stand of corn is magnificent," is the language of the Editor, in summarizing the reports. The acreage is increased, and the condition most vigorous and promising. In S. W. Iowa the Chinch-bug has done considerable damage to wheat, and Rust has affected the crop in limited localities, but the increased acreage and general good condition will give a full average crop, if not exceed it. On Saturday I visited some wheat fields near Burlington, already cut, and the thick sheaves, good heads, and plump kernels, are full of promise. Harvesting will be in full blast before this week closes. Oats are good in some places, poor in others; in the aggregate a little below the average, according to these reports. I call them good in Ohio, Indiana, and Illinois, where I saw them. Upon the whole, the reports from 100 miles and more east and west of this point are decidedly encouraging. "Corn has not been better at this season, in Western Illinois, since the big crop of 1870."—My tour will take me into Northern Iowa, Minnesota, and Wisconsin.

P. S. *Chariton, Iowa* (130 miles west of Burlington). I can confirm the above report as to corn. In coming from Burlington here, we have seen numberless great fields, in most vigorous growth, already waist high and more. We have seen thirty or forty fields of wheat in the shock. The generally wide space between them, and their smallness, does not indicate a large yield. Other crops now growing look well; corn is just magnificent, as compared with anything I have before seen this year, or indeed in other years at the same period.

Old Friends.

Quite unexpectedly, I met in Lorain County, Ohio, a well-to-do farmer, Mr. Alfred Gillette, who was my neighbor and school-mate, 45 to 47 years ago, near Niagara Falls, which was then almost *the* "far West," though even then many of our neighbors pulled up takes from time to time and pushed on in emigrant wagons, to Ohio and Michigan, and later to Illinois—a great attraction being the fact that in the oak openings of Michigan, and especially on the prairies of Illinois, they would find land ready to work, without the heavy "clearing" required in the densely timbered regions south of Lake Ontario, between the Genesee and Niagara Rivers.—It was a most enjoyable treat to talk over with friend Gillette, the struggles of youth, when we worked hard on adjacent farms, gathered all the advantages we could from the district schools, and while yet scarcely grown up boys, taught in neighboring districts during winter. We discussed the peculiarities of old neighbors, and followed out the subsequent history of the boys that grew up with us, few of whom now survive. The old family physician, Dr. Cook, the greatest man we knew, because he had "been to College" and was wonderously learned, filled our boyish heads with an ambition for "larning," and when the writer struck Eastward, friend G. went to Oberlin on a like errand. He afterwards taught in some of the Ohio schools, and finally settled down at farming near Oberlin, where I found him enjoying a good farm, and independence, the result of many years of hard but intelligent work and economy. It was, of course, gratifying to me to learn that during the past quarter of a century he has had the *American Agriculturist* as a suggestive counsellor. It would have been still more gratifying, if he had carried into execution, his oft-formed purpose of sending for its pages some of the practical suggestions gained in his experience. Thousands of others in like manner fail to write out what would be of great use to their fellow cultivators. He has had the pleasure of aiding other young men, who are now settled upon good farms. While he has made profits in general farming, his best gains, I judge, came from raising sheep, of which, at one time, he kept some 400 fine wools. He says one year he took the premium over all others, in LOSING sheep.

Sheep Freezing to Death in June.

Some years ago his sheep had just been shorn and turned out to pasture. A cold storm came on, but being unwell he forgot his coat-less flocks. A neighbor called his attention to them, and on going out he found in one flock of 100 valuable animals 87, I think it was, dead or so chilled that they soon died. Of his other flocks he lost less, as they were partially protected. One large flock gathered in a bushy grove, and with considerable care, nine-tenths of them were saved. I tell this incident to suggest to all owners of sheep the importance of carefully protecting newly-shorn animals, not merely from cold storms, but from chilly nights. Though they may not be fatally affected by cold, there is a great change to them in removing a heavy coat of warm wool, and the cold of an ordinary night is enough to induce diseases that will greatly deteriorate their value. Think of a man wearing four or five thicknesses of heavy woollen garments, day and night, until into June, and then having all these removed in a day except a thin gauze undershirt, and having his bed out of doors upon the ground without mattrass or coverlet.]

Dry Curing Pork and Beef.

Mr. Gillette informed me that he had for a number of years practised, with entire success and great satisfaction, a method of dry curing, which supplied far better and sweeter bacon and ham than the usual brining process. After killing, the carcasses dry and thoroughly cool, 24 hours or so. The sides and hams are then rubbed over with molasses—he uses the Porto Rico. Salt is heated in an iron vessel to a dry fine powder, and almost "red hot," when it is spread quickly over the smeared pork, and when cool enough is thoroughly mixed in with the hand. After about three days the same pro-

cess is repeated. They then lie in a dry and cool place for a couple of weeks, when they are ready for smoking. No brine is used to toughen the pork or hams, or affect the flavor. The smoking is continued at intervals, with care not to get up a heat by a continuous fire. Two fires a day are made with corn cobs, or dry oak or hickory. The total smoking, that is the time the meat is well surrounded with smoke, is 100 to 120 hours in all. After smoking enough, the bacon or hams are packed dry in barrels, or hung up, and kept dry and cool. That to be kept into or through the next summer, is rolled in plenty of newspapers, packed in barrels, and covered over with a thick layer of dry wood ashes. He says he has never lost a pound, and never failed to have bacon and hams sweet and delicious to the taste, and commanding the highest price in the market. We should add, that in curing very large hams by this process, as a safety precaution, he makes small openings down to the bone joints, and fills them with the hot salt.—He cures BEEF in the same way, but only puts it through the first salting process. Indeed some of his neighbors give pork and hams only the first salting, but he deems the second application, above described, as better, and insuring perfect success always.

An Ohio Cheese Factory.

Friend Gillette drove me out to the South Amherst Cheese Factory, which is conducted as follows: The Messrs. Eggleston, Bramon & Co. own the factory and apparatus, receive the milk from the producers, attend to all details of making, curing, and marketing, deduct 1¼ cent per lb. for the cheese and 4 cents per lb. for the butter made, as their pay, and the balance, received every month, is divided among the milk producers, in proportion to the number of pounds of milk each has furnished. (The Factory charge last year was 2 cts. per lb. for cheese, and 5 cts. per lb. for butter). The sales are made at the discretion of the manufacturers, but they are glad to divide the responsibility as to the best time of selling, by taking counsel with the owners. The milk brought in at evening, is set in small cans in cool water, and the cream removed in the morning and made into butter. The skimmed milk is then mixed with the fresh morning milk, and made into cheese. We understand that the cheese thus made sells within one cent a pound of that made from whole-milk, with no cream removed. —About one pound of butter is taken from 86 lbs. of the night's milk.—Ten pounds of milk yield one pound of cheese, on the average. This Factory received the milk of 600 cows during 1878, from which it produced about 206,000 lbs. of Cheese, and 35,000 lbs. of Butter.—In 1877, the producers received $1 for each 100 lbs. or 50 quarts of milk; in 1878, sixty cents for each 100 lbs., or say 1⅕ cent per quart, reckoning milk at 2 lbs. per quart.—The producers received in 1877 about $50 per cow on the average. In 1878, about $35 per cow. Some were dissatisfied with last year's results, and only 500 cows contribute milk this year. The producers at a given hour, morning and evening, strain the milk into a large can or cans, standing upon a platform on the side of the street, at home. Contractors pass around on specially fitted long platform wagons, and gather these cans and take them to the factory, receiving for this and returning the cans, $2 per cow for the season, from April to November. Each producer receives back daily in his cans his proper share of the whey from the factory. This is valued at $5 per cow and upward, for feeding to calves and swine, and is taken into account in estimating the profits. The whole working is regular and simple. The entire dairying work upon the farm is reduced to milking and depositing the milk in the covered cans by the roadside, twice a day, receiving and using the returned whey, and washing the cans.—I have only given a general outline of the system, without going into details of manufacture, profits, etc. The fact that such establishments are very frequent in many sections of the country, and are multiplying instead of diminishing, is evidence of their utility. The better products obtained, and of course better prices, are in their favor. Whether the proprietorship plan above described, or the coöperative one—the producers owning the factory and employing agents to make and sell the butter and cheese is the better, is still a question.

Fultz Wheat—(Winter).

Mr. Gillette scores one point in favor of the U. S. Agr. Department. He received therefrom a parcel of wheat which he has multiplied until he now exhibited to me a 4-acre field that I estimate will yield 120 to 140 bushels this year, or 30 to 35 bushels per acre. It is on heavy clay land, from which two successive corn crops have been taken, the first from a pasture sod turned under. No manure has ever been applied to the land, I believe. The Fultz is a white-chaff, bald variety. It was sown in drills, and tillered from 10 to 25 stalks—15 to 18 stalks being very common. Unfortunately this has been, accidently, mixed with some of another hard-bearded variety, and can only be saved for pure-seed by careful and laborious hand-picking.

Permanently Good Land.

The soil is, in one sense, the farmer's machine for manufactoring crops. Its *wearing* power is an important element in its valuation. A good loam, while easy to work, may produce well during a few years and wear out; the same of a dark peat or vegetable mould. A strong clay soil, on the contrary, is hard to work at first, and but moderately productive, except when lying so as to have a natural drainage, and at the same time have a considerable accumulation of humus (decaying vegetable, leaves, etc.), in its surface. But when freed from water by under-draining, or by a thorough system of ridges and deep dead-furrows, and thoroughly broken up by tillage and exposure to frosts and ameliorated by mixing with it turned under sods, or green crops, or manure. There is no better, permanently good farming land than the original strong clay soils. They will last, and be productive generation after generation, with small expense for foreign fertilizers. They contain inexhaustible supplies of fertilizing elements, that are gradually released as wanted by the crops. The straw produced suffices to keep them mellow enough for the roots of plants. With their straw, and an occasional clover crop turned under, they increase in fertility with successive cropping.

Some soils of this class may in time need the addition of phosphates, though in many cases the phosphoric acid seems to be abundant after 40 or 50 or more years of continuous cropping. I write this at evening, after spending a day in examining some clay farms on the "Western Reserve," and studying the experience of those who have been on them 30 to 40 years. Some of the most thrifty farmers tell me that they neither need nor use any other fertilizers than an occasional plowed-in sward. They save and apply all the barn-yard manures produced, and when they can buy at the village stables manure for 50 cents per wagon load they get it, and apply it upon the surfaces of meadows, or upon potato or corn ground, which has not recently had a sod turned under. When produce is high, or they have special need of manure for particular fields or crops, they can afford to pay as high as $1 per load if they do not have to haul it over three or four miles. That it will not pay to give over $1 per full farm wagon load, as plowing-in sod or green crops would be cheaper.

A Grindstone Manufactory.

I visited in North Amherst, O., the Halderman Quarry, and chanced to meet as one of the foremen an old subscriber of the *American Agriculturist*, Mr. Henry Ludwick, who took me through the works. This is similar to, if not a continuation of, the noted Berean deposit, and it is claimed that the stone here has a better "grit" for grindstones. The deposit extends for miles (I know not how far). At this quarry the sand-stone, nearly white, is in a solid deposit, without any perpendicular seams or cleavage, and goes down to an unknown depth—improving with the descent. They are working some 65 feet below the surface. There is some horizontal cleavage, sufficient to allow partially regular splitting. Deep grooves are cut down with picks, through a layer, on all sides of a large mass. This is broken into smaller squares or pieces by picked grooves and iron wedges. It is then split horizontally into sheets or blocks of the desired thickness. The blocks are rough dressed with picks, and in part sent to cities east and west as building (dressed cut) stone, and in part worked into grindstones. For the latter purpose, the large blocks are roughly worked round with picks. A square hole is picked and finished with chisels through the center, and the great stones, weighing anywhere from 100 to 4,000 lbs. or more, are put upon the shaft (mandril) of an immense turning lathe. While revolving rapidly, a man with a sort of pointed crow-bar turns the stone down to the desired diameter, thickness, and smoothness, when they are slipped off the lathe, and are ready for market. They are sold by the pound. I measured a few of those the weight of which was marked, and found them thus:

Diameter.	*Thickness.*	*Wright.*
4½ feet.	6 inches.	1,112 lbs.
5 feet.	9 inches.	1,832 lbs.
5 feet.	10 inches.	2,200 lbs.
6 feet.	10 inches.	3,298 lbs.
6 feet.	12 inches.	3,958 lbs.

The last, a pretty big grindstone, lacking only 42 lbs. of weighing two tons! Larger stones even are sometimes worked out. They can get them of any size, however large. These one or two ton grindstones were handled with all ease, by one or two men, using cranes and steam power.—There is evidently material enough in this part of Ohio to supply all the good grindstones and whetstones the whole world will want for centuries to come.

Wood and Timber for the Prairies.

Omaha, Nebraska, July.—Through the kindness and courtesy of the Hon. O. F. Davis, we have enjoyed an instructive ride through the country southwest of Omaha, one special object being to see the 40 acres of forest grown on the high open prairie, by Mr. J. T. Griffin. He was originally from Otsego Co., N. Y.; then resided at Oakland, Mich., and settled here in May, 1856, taking up a farm of 400 acres. He was absent from home, but we met him on the way to the city, and gathered some of his experience. He first planted Black Walnuts in the fall of 1856, making holes about one foot apart, dropping in the Walnuts, and covering about two inches deep. They started well in spring, grew finely, and in the spring of 1858 were planted out in the fields, 10 feet apart, in the quinconx order. This, he says, was far too thickly, and it is very evident. There is a multitude of small, well-grown trees. Where, from any cause, one was left 20 or more feet from the others, it has grown much larger. As it is, Mr. G. has a dozen acres or so of fine, straight, thrifty Black Walnut trees, yielding a good deal of fruit (nuts), and worth, acre for acre, many times as much as the cultivated land. While young, occasional trees were trimmed a little, but they usually grew straight and erect without it.—MAPLES.—In 1860 he gathered Maple seed as soon as ripe in May, and at once sowed it in drills near together. It sprouted quickly, and by autumn there was an immense supply of young Maples a foot high or more. Mr. G. says the great point is to sow the seed shallow just as soon as it is well matured and before it has time to dry. They were transplanted 2 to 3 years from seed, and half a dozen years from the seed he began cutting out for fuel, and in 10 years the 8 or 10 acres supplied all the wood for fuel wanted on the farm. He planted the Soft Maple, gathering the seed from wild trees growing along the river. He grows successfully the White or Green Ash, and Cotton-wood, taking young plants of each from the native groves. Hard Maple does fairly. Chestnut grows, but does only fairly. Honey Locust is good, and he has a large number of thrifty trees. The Black Locust would be first rate, but the borers destroyed it after a time; yet he would grow some of them. In order of value, Mr. Griffin prefers: 1st. Honey Locust for timber, etc.—2d. Black Walnut for timber, fuel, etc.—3d. Soft Maple for early fuel.—4th. Cotton-wood for fuel, and many uses as timber, set 4 to 6 feet apart, and as they enlarge, cut out for fuel. Mr. G. says he would guarantee to obtain any number of young Cotton-wood trees wanted for planting for $2.50 per 1,000, loaded on the cars. They grow rapidly almost anywhere, and there is no reason why prairie farmers should not have them in abundance. He advises sowing

acorns (Burr or White Oak) wherever Cotton-wood is planted; the small oaks will come up, and grow well as the Cotton-wood trees are removed. I noticed on his farm long border lines of large Cotton-wood trees 10 to 18 inches in diameter, which presented a pleasing appearance at a distance. His groves and belts of trees show what can be readily done. Such groves of large and small dimensions are becoming a feature of the Nebraska prairies.

Apples.

Mr. Griffin has some good apple orchards. The trees are large and thrifty; but some of the best of them growing along the south side of one of the groves of trees, which act as a wind-break, are dying. He thinks they are too warm in hot weather, and that the wind-break groves should be planted on the *south* side; that they will thus stop the force of the northern winds about as well, and the trees will be in a more uniform atmosphere; that it is not the degree of cold that injures the trees, but the variations of temperature. This putting wind-breaks on the south to break the force of the northern winds is a novel one, to the writer at least. For varieties, Mr. G. says the Northern Spy and Ben Davis are the best for Nebraska.

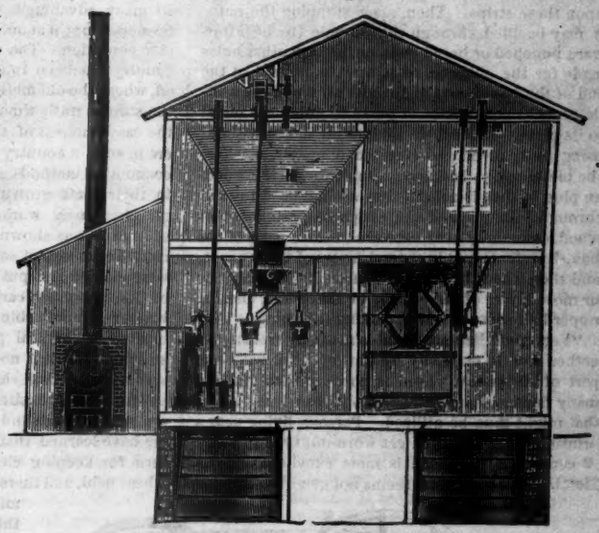
The Syracuse Chilled Plow.

A few weeks ago, a dialogue something like this occurred upon the writer's place. "Here is a new plow which is to be thoroughly tested, and I wish you to use it in the fall plowing."—"Guess I don't need to try *that* plow."—"Why not?"—"Because I know all about it already. Now you've got a plow that there is no mistake about. It's *there* every time—why where I came from, you could'nt give away any other plow."—The implement in question, was the "Syracuse Chilled Plow." The "where I came from," is Dutchess Co., N. Y., and upon reading the numerous certificates published by the makers, we found that a large share of them, and those of the most positive character, were from citizens of that county. The Syracuse Chilled Plow is one of those implements, that tell their story at sight. Just as a sailor knows from the "lines," and the "rig" of a vessel how it must sail, so one who is a judge of such matters, knows at sight, that this plow can't help doing good work. The "cut of its jib," is altogether in its favor. But the "form and manner," are not the only essentials in a working implement, and this is especially the case with a plow. We must have here, matter, as well as manner, and in this respect, the testimony in favor of the "Syracuse Chilled," is as decided as to its character, as it is abundant as to numbers. Among the recent improvements in the arts, none is more important, than that which allows iron to be hardened in such a manner, that for many purposes, it is equal in all respects to steel. The makers of the Syracuse Chilled Plow, claim to have a superior process for producing their wares, and the various prizes awarded at fairs, and the testimony of those who have used them, go to show that their claims are well founded. The plow here figured, is furnished with a coulter; an engraving of the plow, with a jointer has already appeared in our advertising columns. The makers are very positive in recommending the jointer, and regard it as a mistake if a farmer prefers a plow without one, as they claim that a jointer will work wherever a coulter will, and be much more effective. The full "rig" for one of these plows, comprises: two Plow Points; two Jointer Points; one Clevis; one Wheel; one Wrench: one Jointer, and one Band. The company allow their agents to make very liberal terms with farmers, for a trial of their plows, before purchasing. The first plow of this kind, was made Aug. 2nd, 1876, and it was estimated, that there were in 1879, 40,000 of the Syracuse Chilled Plows at work in all parts of the country.

THE SYRACUSE CHILLED PLOW.

A Modern Cider-House.

The traveller through some of the older States, who sees the neglected orchards, and the cider-mills and cumbrous presses going to decay, might infer that cider was no longer made in this country. On the other hand, were the same traveller to come across one of the catalogues of Boomer & Boschert, he would conclude from the fullness and completeness of this, that cider-making was an important industry in this country. Both conclusions would be right. In some of the older States, orchards, from the attacks of insects and other causes, joined to the lessened demand for cider, have been allowed to go to decay, and have not been replaced by new plantations. In other localities it is found that properly managed orchards pay, if not by marketing the fruit, then by converting the fruit into cider, and ultimately, as paying better, into vinegar. Intelligent orchardists are ready to conform their operations to the season and the markets. If it will pay better to do so, they barrel their apples and send them to market. If this does not promise paying returns, they are sure that if converted into cider or vinegar, their fruit will yield a profit, and enterprising fruit growers are ready for either. The large orchards of the fruit districts have their cider and vinegar-houses, provided with the needed machinery for working up the fruit whenever that is the best disposition to make of it. The old cider-press, with its cheeses laid up with wet straw, and its big wooden screw, the creaking of which could be heard for a long distance on a clear morning in autumn, has given way to presses which, while they take up much less room and make vastly less noise, dispose of the apples with remarkable rapidity. In July, 1877, we described a press which we saw at the Centennial Exhibition the year before. This press, which, by a combination of the screw and toggle joint, possessed remarkable power, was one of the Power Cider Presses made by Boomer & Boschert. While an efficient press is a most important part of the outfit of a cider-house, there are many accessories needed for its most efficient working. That cider-making is not one of the "lost arts," is seen by the catalogue of the firm named, where they not only offer to supply the apple grater and press, but every accessory needed for their rapid working. Indeed, they give plans for erecting cider-houses with all needed adjuncts. We give here the sectional view across the end of one of their mills, intended to produce 100 barrels per day, the other engravings being inconveniently large for our columns. The apples brought to the mill, are delivered in bins placed at some distance from the building. These bins are of such size that each two inches in depth holds one bushel of fruit, and allow of ready measurement of the owner's apples or those sent by a neighbor. The apples are conveyed from the bins, by means of an elevator upon the endless-chain principle, to the hopper at the upper part of the building, shown in the engraving at *H*. An annex to the building, seen at the left hand of the engraving, contains the boiler which supplies steam to an engine upon the main floor, which furnish the motive-power of the house. Directly below the hopper is the apple grater, which we do not give, as it has accompanied the advertisements of the firm, and may be seen by referring to the proper pages. Suffice it to say that this grater is suited to rapid work and is ingeniously contrived to prevent damage from the presence of stones or other foreign matters among the apples. Below the grater is an iron track, upon which buckets run to receive the pulp, carry it to the press, and return for another load. Some excellent contrivances are furnished for laying up the cheese, press-cloths being used. When the cheese is built up, it is run under the press, the end of which is seen at the right hand of the engraving. Here the same power is made to work the press, and the juice, as it runs out, passes into large vats in the base of the building, to be raised into barrels by means of a pump for the purpose, also worked by steam. The catalogue referred to gives every possible accessory, down to a hydrometer to test the strength of the juice, and many minor details which we have not space to enumerate. Of course the juice, when once pressed from the apples, may be disposed of as cider, or converted into vinegar. Messrs. Boomer & Boschert afford every facility for expressing the juice in the most effective manner; with what shall be done with it afterwards, they do not concern themselves.



SECTIONAL VIEW OF CIDER-HOUSE.

Lining Boxes with Babbitt Metal.

J. C. Green, Morris Co., N. J., sends the following practical hints. He writes: "I have noticed, with interest, the directions, in the June and July numbers, for re-filling machinery boxes with Babbitt Metal. These are very timely, as I find much ignorance among farmers on this and kindred subjects, and many farm machines come to our shop for repairs when they only want "cleaning up" and new lining in one or two boxes, which the farmer might just as well do himself if he only thought so. As this comes directly in my line of business, permit me to supplement your directions with some additional hints and suggestions. If the two half boxes are filled separately, as you suggest (p. 269),

it will be found difficult to adjust the shaft in each so that they will fit in all respects when they are put together. We think a better plan is, to pour the metal into the lower half-box while it is bolted to the frame where it is to be used, as this is the eas-

Fig. 1.—THE "CHAMPION" GRAIN DRILL.

est way to get it exactly "in line" with the other bearing or bearings on the same shaft. After the lower half of one or more boxes is filled, remove the shaft and trim off the upper surface of the new metal; then replace the shaft, and put on the upper half-box, with a thin strip of pasteboard or wood on each side of the shaft between the two half-boxes, and screw the upper half down firm upon these strips. Then, after stopping the ends, it may be filled through the oil-hole (to be afterward punched or bored out), or through other holes made for the purpose, or it may be poured at the end of the box on top of the shaft, by making a little tunnel-shaped place of putty to guide the metal to its place. Indeed, we seldom fill boxes without using putty or clay to stop small openings where the metal might leak out. Don't forget the wooden plug in the oil-holes if they are not used to pour through. In place of the strips of pasteboard or wood, commonly used between the two parts of the box, I prefer to put in several layers of thick paper, and then when the bearing wears a little loose, one or more layers of paper may be taken out, and the upper half screwed down, making it as snug as new.

"Very good Babbitt Metal is made by melting together 9 or 10 parts, by weight, of Lead with one part of Antimony. Lead is cheaper than tin, and many farmers have scraps of old lead lying about that might thus be utilized. Persons living near a printing office can often get worn-out type for 10 or 12 cents per lb., which is most excellent Babbitt Metal. I may add what seems not generally known, that wooden boxes may be lined in this way, even easier than iron boxes, and thus farmers may often replace broken iron boxes with wooden ones, or build some kinds of machinery themselves, and make boxes in this manner as good as the best.

"If, in any case, the space for the metal is quite thin, it is a good plan to form, with putty, a tunnel-shaped place where the melted metal is to enter, so that it can be poured very rapidly. If a proper ladle is not at hand, use an old frying-pan, though it will not hurt a new one. If a stove or furnace is not convenient, lay three bricks or stones on the ground a few inches apart, and set the ladle on them and build a fire below, with dry chips, etc."

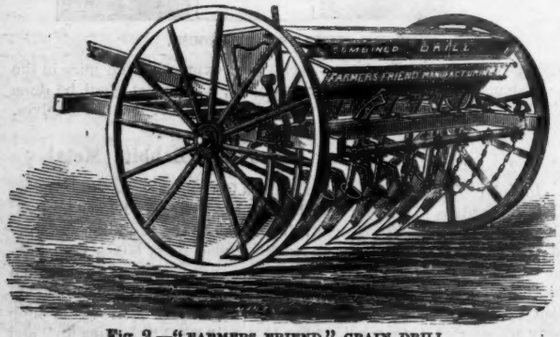


Fig. 2.—"FARMERS FRIEND" GRAIN DRILL.

About Grain Drills.

Improvements come about slowly, but the regular planting of wheat by means of a drill possesses so many advantages over broadcast sowing, that farmers adopt it at once, wherever the land is in suitable condition. The writer's experience in a grain country has been in one originally heavily timbered, where the old methods was, to sow wheat among the stumps until time and decay allowed of the easy removal of these obstacles. Farmers in such a country are on the lookout for economical methods, as they have to compete in their grain growing with their brethren on the easily worked prairie lands. So soon as it was shown that the use of a Drill made an important saving of seed, the fields were cleared and put into condition to allow of its use much earlier than formerly, and wherever practicable the Stump Puller, anticipated the natural process of clearing the stumps. But it is not merely in the saving of seed that the Drill shows its value; the even sowing at the desired depth, and proper covering, are strong points in its favor. Recently our farmers have learned that cultivating—a very indefinite term for keeping clear of weeds—will pay in the wheat field, and there is now nothing of greater promise to our grain-growers than this one of stirring the soil between the rows of wheat and killing the weeds that retard its growth. Of course cultivating is only possible where the grain is in regular rows, and regular rows are only possible when the grain is sown by a Drill—an interesting illustration of the inter-dependence of inventions. Had there been no grain Drill there would have been no Wheat Hoe, and the invention of the Wheat Hoe, or cultivator, has on the other hand greatly enhanced the value of the Drill. The grain Drill is merely a seed-sower upon a large scale. A box contains the seed, which is delivered by tubes—usually eight—at the proper distance apart for the drills. The difference in the various styles consists in the arrangements for opening the soil, for covering the drills, and for the regular supply of the seed. Modern drills have an attachment for sowing concentrated fertilizers with the grain, and some are so constructed that they may be converted into Corn-Planters, and may be adapted to sow grass seed. We give here engravings of two of the popular kinds of Drill now in use. Figure 1 shows the "Champion Grain Drill," made at Owego, N. Y., for which the makers find an increasing demand. They claim for this machine that its feeders are so constructed as to deliver an exact amount of grain, that needed changes can be made without loss of time, and that the arrangement for lifting the hoes out of the ground or stopping the feeders, are worked with the greatest ease. This Drill has an arrangement for sowing grass seed; it has also a corn-planting attachment, which deposits the corn in two rows, 42 inches apart, with the kernels at distances of 6, 12, or 18 inches, as may be desired. The "Champion Grain Drill" was one of the implements that received a medal at the great trial of drills made during the Centennial Exhibition.

Another prize Drill at the Centennial was the "Farmers Friend," made at Dayton, O., shown in figure 2. An engraving of its exterior is an unsatisfactory matter of illustrating a grain drill, as the important portion, the one which a judge of machinery would examine first—*i. e.*, the feeding portion—is hidden from sight. The makers of this Drill also claim great perfection for its feeding device, as well as for its "Cone Gearing," by which the distribution of the seed is regulated. As will be seen by the engraving of this device in figure 3, the several wheels or gears, regulating the movement, are bolted to a cone. A cog-wheel on the main shaft is moved by a lever to engage with every wheel of the cone which will cause the delivery of the desired quantity of seed. As with other first-class drills, this is made to sow fertilizers, and has an attachment for seeding grass. Not content with the award at the Centennial, the makers competed at the Paris Exposition of 1878, at which this Drill received medals, as it did in the same year from the Agricultural Society of Scotland. Knowing that the "Farmers Friend" was in use by a farmer of our acquaintance, we asked his opinion of it. The reply, not a very long one—"I consider it a first-class machine in all respects"—is, to those who know the writer, quite as expressive and says as much as would be conveyed in a long letter. Indeed, those few words from an intelligent farmer are to some persons a more valuable testimonial than many medals.

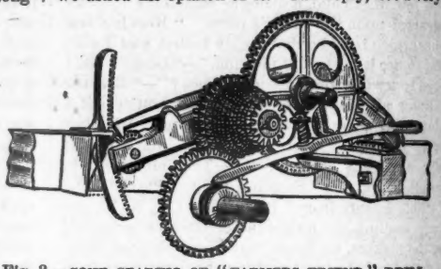
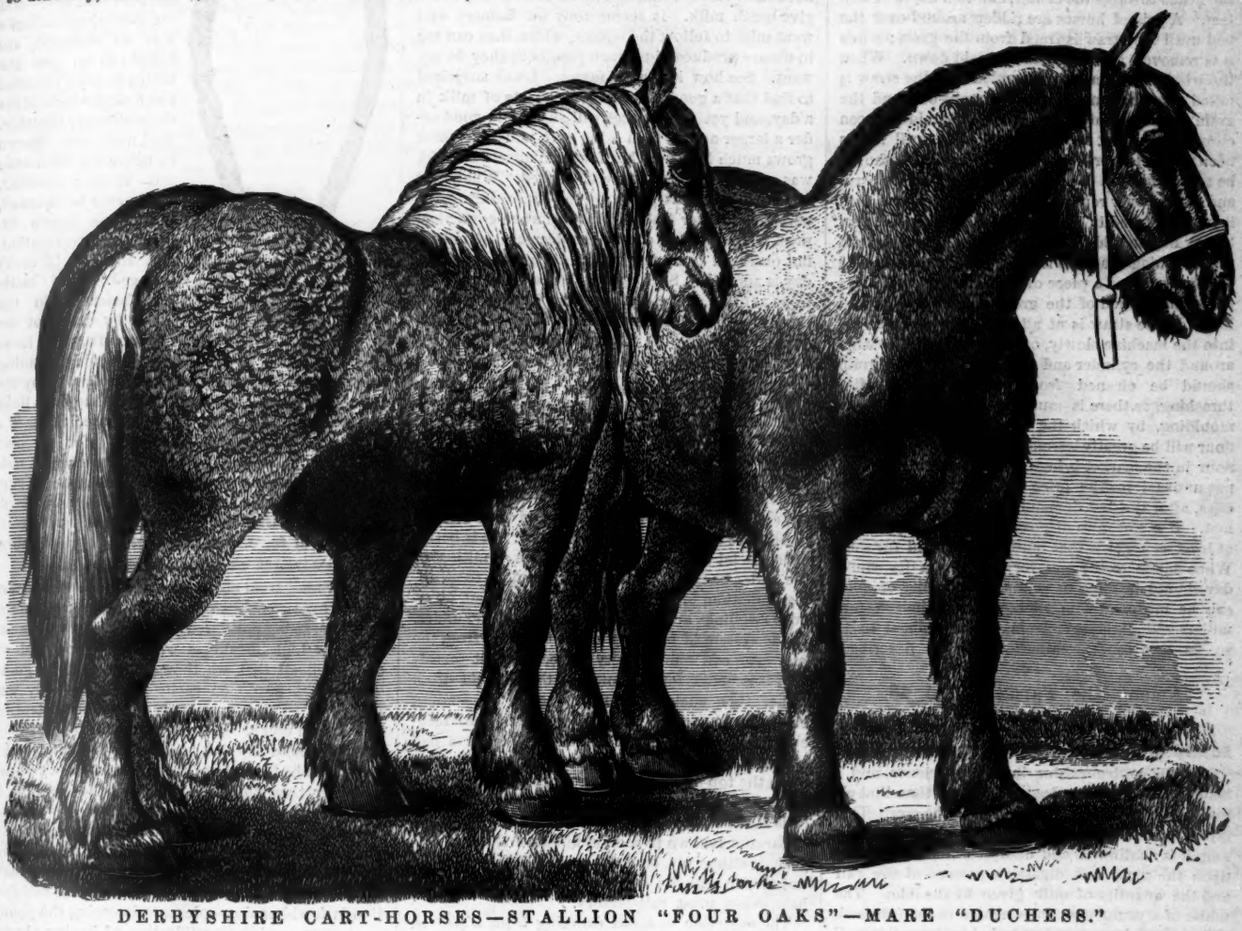


Fig. 3.—CONE GEARING OF "FARMERS FRIEND" DRILL.

Fall Plowing.—The better the preparation of the ground the better the crop. The high average yield of the English farms is no doubt largely due to the thorough preparation of the ground before seeding. Our climate is superior to that of England for wheat growing; yet a yield of 64 bushels per acre is not at all infrequent among good farmers there, while here 40 bushels per acre is an unusual yield. Two plowings, several harrowings and in many cases rolling or crushing; and the excellent preparation of the soil by a previous root crop must have a much better effect upon the soil, than one plowing, very poorly done because of the hardness and dryness of our soil in midsummer, and very imperfect harrowing. It might be well for us to lay out more labor on our wheat crop, and so prepare the ground better, and raise our average from 12 to at least 20 bushels per acre. The difference in the amount of wheat at harvest would pay for a good deal of extra work in plowing, etc., and yet leave a profit; besides, the soil would not forget the generous treatment in one year nor two.

English Cart Horses.

The cart is an old and firmly established farm vehicle in England, and also in other European countries. More work is done with it than with the wagon, upon the road, as well as in the field; to draw hay, and manure, and carry in the harvest, and covered with limestone, which in many places rises into considerable hills of the most picturesque form. It contains the magnificent Chatsworth, the seat of the Duke of Devonshire; the ruined castle of Castleton, made famous by Sir Walter Scott in his "Peveril of the Peak," and the great cavern which runs for miles under the mountains. Be-



DERBYSHIRE CART-HORSES—STALLION "FOUR OAKS"—MARE "DUCHESS."

the farm cart is in constant requisition. This general use of the cart has given rise to, and kept in use, a breed of horses adapted for the work. The Cart-horse of England; the Flemish draft horse and the Norman horse, all serve for this special use in their different countries. In England, cart horses are in such general demand, and local customs and habits are so distinctly marked, that we can not characterize any one breed as *the* cart-horse, there being many kinds, all of which, while they possess a generic likeness, have each their peculiar and specific differences. Thus, there is the Clydesdale-horse; the Norfolk-horse, the "Shire," or Yorkshire-horse; the Derbyshire-horse and others, all of which are specially "cart" horses, and to distinguish which of these, or how many of them can be considered as "an English cart-horse," puzzles even the adepts in England themselves. Just at present, as every valuable race of domestic animals is considered worthy of a stud book or Herd record, so the English Cart-horse is honored in this way, and an "English Cart-horse Society," with a proposed stud book, has been organized. This is, however, the beginning of a serious trouble, for no one seems to know what should be admitted or what rejected, and the result may be, that by and by, each different race of cart-horse, localized by close breeding and confinement to a narrowly bounded district, may have its society of breeders, and its stud book. In this case it is probable that the race, of which we here give an illustration, which is the Derbyshire Cart-horse, may become the one which shall receive the greatest attention. Derbyshire is a noted county in England; being rough and rugged as to surface, fertile as to soil, sides, it contains the first cheese factory ever established in England, and is an excellent dairy country. The roads are hilly and rough, and are excellently matched by the rough and rugged cart-horses which traverse them. Our illustration, for which we are indebted to the London "Agricultural Gazette," was taken originally from a catalogue of 29 Derbyshire cart-horses, which were sold recently at Alfreton, Derbyshire, for Mr. John Nix, of Outseats stud farm. Mr. Nix has bred this class of horses for more than 50 years, adhering to it with steadiness and perseverance. His stock, he states in his description, to be "the old-fashioned sort, possessing weight and power, with great bone and abundance of hair, strong firm feet, and the best action." The stallion, "Four Oaks," is a 2-year-old colt, 17 hands high, and a rapid walker; the mare, "Duchess," is 4 years old, very wide across the loin, short in the leg, gray in color, and, as may be seen, has great substance. She is an excellent worker, and has taken the first prize as a yearling, and the second prize as a 2-year-old in the two exhibitions in which she has been shown.

The cart-horse, proper, has no place in our agriculture, yet it may well be questioned if we do not miss something by neglecting both the horse suitable to the vehicle and the cart as well. The narrow tired wagon in general use, with its double team, carries no greater load than an English farm cart with its one broad-footed, big-boned, wide-bodied heavy cart-horse, able to move a ton in a broad-wheeled cart over a plowed field. The usefulness of the carts; the ease with which they can be moved, turned, tipped, and unloaded, and their convenience in many other respects, have much to recommend them; and the few enterprising American farmers on whose farms they have been in use for years, could not be induced to discard them. It is true that very heavy horses are needed to move them, but a pair of such horses will be found as active in a wagon as a lighter team, and able to move twice as much. It is safe to estimate that two heavy horses and carts, with three men, will do as much work, or more, than can be done by four light horses, with two wagons and three men.

Harvesting Buckwheat.

Buckwheat being easily grown, succeeding on poorly prepared soil, giving a quick return, and generally yielding a remunerative harvest, is a favorite crop with inexperienced farmers. Still it requires peculiar treatment in the harvesting, and those who are not acquainted with it are apt to make mistakes. It requires cutting before it is fully matured; and its habit of throwing out blossoms at the top until killed by frost, is apt to mislead. When frost is expected, the crop should be cut, and many immature grains will become perfect in the few days during which it is drying in the field. Whenever the lower branches are well loaded with ripe grains, it may be cut; this should be done with the cradle, and while the stalks are damp with dew or moist after a shower. The grains are loosely attached to their stalks, and are easily shaken off in the cutting or raking, unless these are carefully done. After the swaths have lain for a few days for the grains to ripen, the buckwheat is raked up into bunches and these are set up in gavels or loose stooks, without being bound; the tops being gathered together as much as possible. In this condition the crop remains until it is thrashed. As it heats very rapidly it should never be put into a stack, nor mowed away in a barn, as has been sometimes done by inexperienced farmers. When the buckwheat is sufficiently cured and dry, and the unripe grains have matured, it may be thrashed

by treading out with horses, with the flail, or the thrashing machine. It is frequently thrashed in the field, by making a bed of cleanly swept ground and beating the swept surface as hard as possible with a rammer made of plank. The gavels are placed in a circle, upon the bed thus prepared, the heads towards the center, and to a depth of two feet. A pair of horses are ridden around over the bed until the straw is freed from the grain; when it is removed and a new bed is laid down. When the whole has been thus trampled out, the straw is raked off, the fanning mill is brought out, and the grain cleaned up at once. When the grain has been cleaned, it cannot be safely put away until it has been well dried, or it will heat and spoil. It should be spread upon a dry floor in an airy shed or barn, and turned over repeatedly until it is dry, and then it may be stored in bins or in the granary. A dry, breezy day should be chosen for the thrashing. If the thrashing machine is used, the concave should be removed, and a piece of smooth plank put in its place, else much of the grain will be broken and lost. If the straw is at all damp, it should be fed into the machine slowly, otherwise it is apt to wind around the cylinder and give trouble. The grain should be cleaned from the chaff soon after thrashing, as there is much danger of heating and moulding, by which the quality and yield of the flour will be greatly lessened. The first buckwheat flour in the market brings the best price, and it is not unusual for the price to fall one half in a few days, after the first demand for new flour has been met. It is a crop to dispose of as soon as possible, at least as regards that portion intended for sale. When taken to the mill for grinding, a dry windy day should be chosen, as the best quality of flour can be made only in such weather; indeed, few millers will grind this grain, unless obliged to do so, in any other weather than that described.

Among the Farmers.—No. 43.

BY ONE OF THEM.

Injury to Cows by allowing Calves to Suck.

There is no truer thing in my experience, and I believe in that of hundreds of others, than that allowing a calf to suck is an injury to the cow. This injury is more or less permanent according to how long it is continued, and doubtless depends largely upon the vigor and digestive powers of the calf and the quantity of milk given by the dam. The udder of a young cow, thus treated in the full flush of her yield, loses capacity to hold a large "mess" of milk, if it ever had it, and older cows becoming accustomed to the steady half-hourly drafts of the calf, fall off in their yield rapidly after the calf is sent to the market. Calves, it is true, usually fatten better on the cow than as fed, in general practice in this country, but our practice is certainly wrong, and I am by no means sure a calf may not be just as well fattened off, as "on the cow." In fact I have once or twice fattened a calf so well "on the pail," that the butcher complimented the veal, saying that any one could see that that was no skim-milk calf, whereas, after the first three days of its life, it had had no milk which was not skimmed. The loss of cream was made up to the calf by as much scalded linseed-meal cake as was judged good for it, and it always had a wisp of sweet hay, or bite of grass in its season, to nibble upon. All calves are not alike in this respect, but where milk is the principal thing, veal is secondary, and so we are willing to sacrifice something of the excellence of the veal to the good of the dam.

When a deep-milking cow has two calves put upon her, their thrift will often indicate an enormous milk secretion. I presume no harm comes from such practice, commenced after a cow is four or five years old, but thousands of good heifers are spoiled every year because, not being pleasant to milk, their calves are left to run with them. Their udders never becoming distended, they lack capacity to carry their milk from one milking to another, and when their calves are taken away, not only do the teats leak, but the discomfort caused by the unusual distention of the udder results in a decrease of yield. Whereas, had the distention occurred when the whole system was in the plastic condition in which it is just after calving, when the udder is naturally swollen and more or less painful, it would have become for life adapted to the circumstances and would be of increased capacity.

A very sensible article is going the rounds of the papers, showing that it is just because wild cows have their calves running with them that they never give much milk. It seems folly for farmers who want milk to follow the course, which they can see in nature produces just such results as they do not want. See how it is with mares. I was surprised to find that a good mare gave 14 quarts of milk in a day, and yet most mares will sustain in good order a larger animal than a big calf, and one which grows much faster. This fourteen quarts of milk was given when the colt was weaned. What, is it fair to assume, was given by the mare during the period soon after foaling, the time when cows yield most? In cows, of course the decrease of milk is not observed until the system of milking twice a day is adopted. So long as the calf takes its rations as often as it can digest what it takes, the flow keeps up—but it renders the cow more or less incapable of carrying the milk produced, and of producing more than she can comfortably carry.

Feeding Calves from the Pail.

The desirableness, therefore, of promptly removing the calf from the cow is apparent. It is in fact demanded by every motive of economy. A calf is easily taught to drink, and will empty a pail of milk in a very short time. The usual practice is to leave the calf with the cow three days, and then remove it, because the milk may then be used. It is better never to let the calf suck, unless the condition of the udder be such that the butting and, so to speak, manipulation, of a hungry calf, are needed to reduce swellings and cakey masses within the udder.

The system of allowing calves to drink from the pail is an evil one in every respect, except merely that it is better for the cow that they should drink rather than suck her. The practice of feeding calves, by means of what is termed a "calf feeder," is a growing one in England. This is a pail arranged with a close fitting top and a rubber teat upon the top of it, which is connected with a tube having a simple valve at the lower end, which lies or is fastened in the bottom of the pail. I put this apparatus (shown in section in figure 1) in use this year, getting up one for a neighbor who was unfamiliar with its construction, and the results have been most satisfactory.

The objection to a calf drinking from a pail is, that by this means no saliva of any account is mingled with the milk. The effect of this fluid in aiding digestion is well known, and it is a fact, also well known by every farmer, that calves fatten much more rapidly, and better, as a rule, upon the cow than upon the pail, even if they get a pailful of new milk fresh and warm from their dams morning and night. A good many calves become "pot-bellied" from drinking rapidly, and I have no doubt are thus permanently dwarfed. I am by no means certain that skimmed milk taken slowly by the operation of sucking, will not prove of more real benefit to a calf than whole milk drank rapidly. In the home-made calf-feeder above alluded to, the contraction of the larger tube is effected by placing, for a short distance, a small one inside of it. This secures slowness of flow, and enforces sucking and mouthing necessary to a flow of saliva.

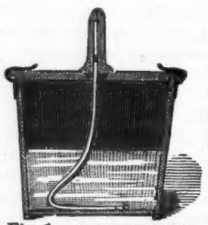


Fig. 1.—A CALF-FEEDER.

Permanent Label and Halter for Cows.

A few weeks ago Mr. J. P. Haines, of Cranmoor, N. J., showed me a necklace for cows which he finds so convenient that he has adopted it for his entire herd, and had his stables built with reference to it. To me the plan has much to recommend it. Strong galvanized-iron twisted-linked chain is cut into suitable lengths to go easily around the necks of the cows—in fact of all cattle which are to remain permanently in the herd, the chains being of different lengths to suit. These are bound with leather, hand-sewed, the leather being tightly drawn around the links. Brass plates, like heavy trunk checks, (of which I send you a sketch), are provided also—and the Scandinavian locks now so common, are found to be just the things to carry the label and lock the ends of the chain strongly together. This neck gear, (shown in figure 2,) when once put upon a yearling, need never be changed, unless she grows beyond all expectation, and then it is easily changed. The cattle are fastened in the stable by means of the common frog and loose ring fastening, running upon an iron rod. The leather is not worn by the fastening, which always rests upon the bare links and padlock. When iron rods are used there is a good deal of noise in the stable. For my own part I should decidedly prefer wooden upright rods or posts upon which the stable fastening should run. The label has stamped upon it: "Cranmoor Herd, No. —, J. P. Haines;" it is, as seen in the engraving, of oval form, and measures 2½ by 1½ inches.

Fig. 2.—A HALTER FOR COWS.

Grades or Cross-bred Fowls.

I have not been able of late to give much attention to fowls, in fact never have found very much profit in raising pure-bred ones. At one time, however, our Light Brahmas were very good, and we could sell all that we thought were fit to go as breeders at $3 to $5 each—which certainly was profitable. The fancy breeds need much attention or they run down. Several yards must be kept or one finds suddenly that some cross has "knicked" badly, and he has a lot of unsalable fowls, which are no better than dunghills for use or for market, if indeed as good. Of late years we have always had full-blooded cocks, and also a few pure hens of their breed, but sometimes none, so that our chicks have all been grades. We find that for hardy chicks, good motherly hens, and real satisfaction in fowl-keeping—pleasure in seeing the young ones grow—and the gratification of having always an abundance of fresh eggs, there is no system like it. We have used in succession, Light Brahma cocks, White Leghorns, Dorkings, and Plymouth Rocks. These last we have had for two years, and have them booked for the third. Chicks never seemed hardier—never grew more rapidly. We have never had steadier layers, better setters, more gentle, quiet, careful mothers, and this without noise, without fighting, without flying over fences, or any other annoyance. I do not think that they lay as many eggs as the Leghorns, but they surpass the Dorkings greatly as layers, equal the Brahmas as winter layers, are yellow-fleshed, make large, quick growing, juicy broilers and roasting birds. The grade Plymouths, in the same brood with pure Asiatics, surpass them in growth and early maturity, and they weigh more at any time before they are 9 or 10 months, or perhaps a year old. After that, the Asiatic breeds, if they do well, will grow larger because they grow longer. As to ease of keeping, I can not say exactly how much or little they will eat, but when not laying or sitting, they are always in condition for the table. I refer to grade and cross-breds with particularly well marked Plymouth characteristics. If a cross-bred takes after the other breed, whatever it may be, as some of them will, they are counted as mongrels, and not as Plymouth Rock grades. The progeny of the grades show the P. R. cross very strongly.

When to Cut Fence Posts.—"Experience teaches." It is difficult to prove by argument why fence posts or timber cut for other purposes, in August, will be more durable than if cut at any other season. But it is well known to many who

are experts in the timber business that "powder post" or the destruction by larvæ of wood-eating beetles, never occurs in hickory or oak cut in August; and that pine saw-logs, cut in the summer, will be sound after being left several years in the woods, when those cut in the winter will often be seriously rotted. Many farmers aver, as their experience, that fence posts cut in August will outlast by many years, others, that are cut in the winter or in the spring. While we may not be able to explain the reason from any difference in the character of the sap, or the condition of the wood itself at the two seasons, it may be well to accept the fact as shown by experience, and get out the fence posts, if possible, in the month of August.

The Wheat Rust.

By the time this number of the *American Agriculturist* reaches its readers, many will have had their attention called to what is generally known as "Wheat Rust." As the skin and clothing of the harvester are covered with the fine, bright, orange-colored powder which he brushes from the leaves and stems of the wheat plant, he will naturally ask: "What *is* this rust?" "What causes it?" etc. But to the farmer who sees his hard earned grain almost ready for the harvest, shrink to worthlessness at the withering touch of this destroyer, there will occur the more important question: "How to prevent it?" At the outset, we may say that the Wheat Rust is a minute fungus known to botanists as *Puccinia graminis*. Those who would learn something of the manner of growth of these plants are referred to an article in the July number, entitled: "Fungus—Fungi—What are Fungi?" With the statement that the Rust is due to a minute parasitic vegetable, let us endeavor, with the aid of the microscope, to more fully understand its real nature and its habits of life.

1.—WHEAT STEM.

To begin at the proper place in the life history of this fungus, we must observe that grain stubble, in autumn, is often covered with small, black, or dark-brown streaks, which might be easily mistaken for weather stains. If the whole plant had remained upon the ground, the leaves and stalks would have had these same dark patches and lines upon them as are shown in figure 1, where a small portion of an affected stem, and the base of a leaf are represented. A small part of the leaf is shown, somewhat magnified, in figure 2, and the dark spots are seen to be due to a vast multitude of dark colored spores, which have developed from the interior and ruptured the epidermis, or skin, of the leaf. If, with a sharp knife, or better, the keen razor, we used in this case, we make a thin cross-section of the leaf through one of these dark spots,

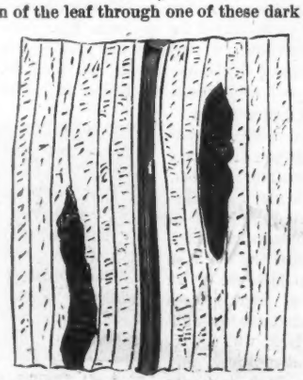


Fig. 2.—PORTION OF WHEAT LEAF.

we have what is shown in figure 3. The lower portion of the engraving, *c*, represents the interior of the leaf; *a*, *a*, the epidermis which has been ruptured and pressed back by the spores, *b*, *b*, as they formed

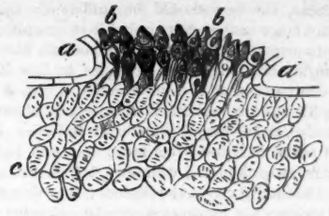


Fig. 3.—CROSS-SECTION OF SPOT.

and increased in size. These spores are always double, that is, there are two, end to end, at the extremity of each slender thread. Figure 4, *a*, shows one of these double spores separated from its neighbors and highly magnified. The germination of these spores is shown in *b*, which consists of the bursting of the thick outer coat of the spore, and the contents elongating into an irregular filament, *c*, upon which in a few hours a number of very minute ovate bodies are formed, *d*, *d*, which soon become detached. We have, in fact, had five or more small spores formed out of the old one; this takes place in the spring whenever the *winter spore*, as we will call the one with which we started, is provided with heat and moisture. From the winter spore we have the small spores, (*d*, *d*), formed directly, one of which is much magnified at *f*. These spores, (*d*, *d*), find their way to the leaves of the Barberry, and if there are no Barberry bushes, probably to some other plant, where they germinate, sending their filament into the tissue of the leaf, and in the course of a few days a yellow spot is formed on the Barberry leaf, figure 5, *a*, and shortly after a number of cups are formed from the bursting open of the epidermis of the leaf. As these cups are close together they are often spoken of as "Cluster Cups," which is shown somewhat magnified at *b*, and a single one more highly at *c*, with a side view of the same at *d*. The lower portion of figure 5 represents a still more highly mag-

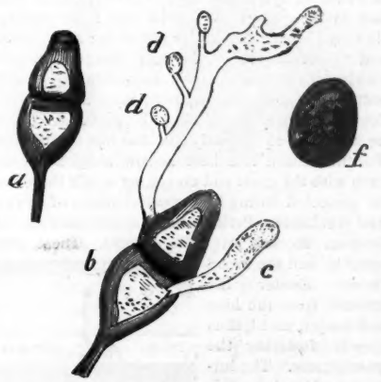


Fig. 4.—SPORE GERMINATING.

nified view of a cross section through one of these cups, showing the ruptured epidermis of the leaf at *e* and *f*, between which the cup, *h*, extends down into the interior of the leaf, *g*. The cup is packed with spores which are formed in rows and break away from their attachment, *h*, and are carried away by the wind. Owing to pressure, they are more or less angular in outline, as seen at *i*, which shows one of these spores enlarged. These spores soon find their way to the growing wheat, upon the leaves and stems of which they germinate and send their absorbing threads through the plant tissue.

After a short time these threads congregate at certain places near the surface of the wheat leaf, and, in enlarging, rapture the epidermis, *a*, *a*, rapidly ripen the myriads of yellow spores which gives the rusty color to the parts affected, and the common name to the fungus. This stage of the fungus is known to botanists as *Uredo*. Figure 6 shows a cross section through one of these *Uredo* spots, with the rough orange-colored spores, *b*, crowded together, each on a slender stalk, which attaches it to the filaments in the tissue of the leaf, *c*. From these same filaments, and in these same spots, the brown spores appear later in the season and close the cycle of changes of this polymorphic fungus.

The Clover Crop.

Many farmers look to a crop of clover, to restore the fertility of their land, and in so doing, they look in the right direction. Why is it that this plant is so potent in bringing up exhausted soils, as it cannot of itself create any plant food? In the first place, we have in the clover a plant which exposes a large expanse of leaf surface to the air and sunshine, and is able to transpire a large amount of moisture. An average acre of clover will send off from its leaves, over 8 tons of water in 24 hours, in the state of vapor, while under the same circumstances, an acre

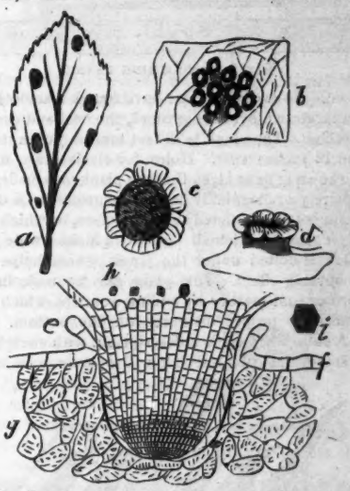


Fig. 5.—BARBERRY LEAF AND CLUSTER CUPS.

of wheat will transpire only one-fourth as much. Such being the case, a much weaker solution of plant food will suffice for the clover plant. It is on this account that clover is known as a close feeder, because is can thrive on a soil that is poor in plant food. But this is only one factor in the success of clover on a soil where a cereal would fail. The clover plant is a deep feeder, sending its fine roots far down into the soil, and filling all the sub-soil as well as the top-soil with its multitude of absorbing rootlets. If it is a close feeder, it must follow that it must have abundant provision for the absorption of a large amount of the weak solutions of plant food, which it concentrates in the leaves by evaporation. One man may be able to profitably manufacture salt from sea water, while another would starve when engaged in the same industry, owing to inferior facilities for using the weak solution. So with the clover, as contrasted with wheat, or many other crops. Having shown why the clover plant can succeed where others will not do well, let us see why a crop of clover can benefit the land by making it more productive. There are many instances on record, where a heavy crop of clover has been removed, and the following year, a much larger crop of wheat has been obtained, than on like soil where wheat had succeeded wheat. We must also remember that in removing a crop of clover, we take off much more of the essential food elements, than in the case of the wheat. The explanation is

Fig. 6.—CROSS-SECTION OF RUST SPOT.

something like this: The stubble and the part below ground, is to be remembered as making up no small part of a clover plant, and here we have a large quantity of plant food, especially nitrogen, in a concentrated and available form. The clover plant has pumped up and accumulated a quantity of food which the wheat plant cannot of itself reach, but gladly accepts when thus prepared. If the

potash, phosphoric acid, and nitrogen, which is removed in a clover crop, is returned in manure or its equivalent, or if the crop is plowed under, then there is no loss in any sense, but on the other hand an accumulation and concentration of available plant food, especially of the nitrogen, which the clover plant secures from that great store-house of this element—the atmosphere. It is well said that, "clover seed is the best manure that a farmer can use."

A Smoothing Plank for Seeding to Grass.

In seeding to grass, alone, the harrow ridges are apt to cause the seed to come up in rows, unless the surface is smoothed over before the seed is

Fig. 1.—SMOOTHING PLANK.

sown. To avoid this, we have found a smoothing plank, drawn over the ground, the best and easiest method. The plank is 12 feet long, 2 inches thick, and 12 inches wide. Holes for clevises are made as shown at figure 1, so that the plank may be drawn squarely or diagonally across the ground. A draft chain may be fastened to the clevises, to which one horse may be hitched. A strip 2 inches wide and thick is bolted under the plank, which helps the smoothing effect. This plank may be made into a corn or root marker by adding runners, which are placed at proper distances on the bottom.

A subscriber sends a description, with sketch, of a smoothing plank which will operate well upon

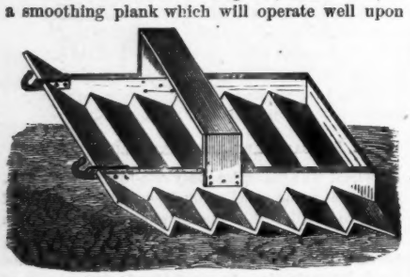
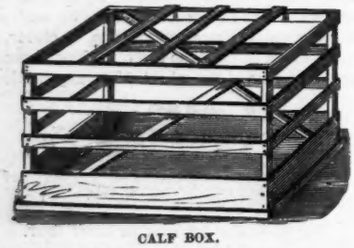


Fig. 2.—SMOOTHING MACHINE.

heavy and rough ground. This is made of a series of planks, six feet long, fastened together and arranged as shown at figure 2. A seat may be provided upon which the driver may ride, his weight adding to the effectiveness of the smoother.

How to Box and Ship Calves.

Farmers who wish to improve their stock find it more profitable to buy calves, and wait for them to grow, than to purchase mature animals at a much higher price. But there is the difficulty that a three months calf is quite too young to be shipped as freight, without being carefully boxed, consequently there is now a large business done in selling calves, which are boxed, and sent safely for thousands of miles, from the East to the farthest West, and from the United States to many distant countries. Now that the true significance and value



CALF BOX.

of a good pedigree is well understood, one may safely purchase a young animal whose descent from excellent parents is known, with but a small risk of disappointment. It is true that, in rare cases, a young animal may not develop all the good qualities of its parents; but then it may just as probably surpass them, and generally it will, at least, equal them, so that the chances may be taken without much risk of disappointment. In boxing a calf or any other small animal for shipment for long distances, the box should be sufficiently roomy, but not large enough to permit it to turn around or even to attempt it, lest it might become fastened and injury result from its struggles to free itself. For a calf of three or four months, a box 5 feet long, 3 feet high, and 2 feet wide, will be about the right size, and it may be made as follows: Four stout posts, 2 x 2 and 3 feet long, are used for the corners, strips 9 inches wide and 1 inch thick are nailed around these at the bottom; the other strips are 3 inches wide, leaving a space of 6 inches between them. There are four strips and three spaces. Diagonal braces are put in to strengthen the frame, if necessary. The bottom is boarded tightly, and the top is closed by three cross laths securely screwed down. At the front the upper three strips are made into a door fastened with leather or other hinges, and a staple and a hasp, so that it may be opened to water or feed the calf. When live animals are shipped by express, the carriers engage to furnish water, and give whatever feed is sent with them. A bag of cut feed and another of meal, should be sent with each box, with plainly marked directions how to give it. It will also be prudent to send a pail with each box, in which the feed and water may be given to the confined calf.

Seeding to Grass in Autumn.

It is hardly safe to follow a strict rule in any agricultural practice. Where a farmer owns his land, and can do as he pleases with it, there are times and circumstances in which he may do some things which are unusual. The best cultivation is that which produces from the soil, the greatest possible yield, with the least expense. It may be that in doing this, we set at defiance all the supposed rules of "good husbandry," so called; but in agriculture, as in other affairs, "circumstances alter cases." Thus, it may be desirable to get a field into grass as early as possible, and it is generally supposed that it is necessary to seed down with a foster crop, as wheat or rye in the fall, or barley, and perhaps oats in the spring. But while this is the custom, there is nothing imperative about the rule. Grass and clover may be sown early this month, with every probability of success. Something, of course, will depend upon the weather; for if it is dry for a few weeks after the sowing, the germination may be so late as to seriously risk the loss of the seed. For this reason it is best to sow some sheltering crop with the grass and clover, by which these may be protected during their earliest stages of growth and weakness. Perhaps nothing else answers this purpose so well as white turnips. These grow quickly, and the broad leaves shelter the ground from the heat and keep it moist, thus greatly fostering the young grass. The turnips, besides doing this valuable service, will furnish a large amount of green fodder for late fall or early winter feeding. Three hundred bushels per acre, is not at all an unusual yield of turnips, when grown in this way. It is not desirable to have the roots very large, nor the tops very broad, lest the grass and clover, instead of being protected, may be smothered. The clover will become sufficiently large to resist the frosts, and as soon as the turnips are pulled, which should be done early, the grass and clover thicken up very rapidly, and often cover the ground before it is frozen for the winter. Then a top dressing of fine manure will be of great benefit, and in the spring the growth will be very rapid. When the soil is in good condition, and can be made very fine and mellow by repeated harrowings, it may be safe to sow the seed alone, and trust the chances for a good catch. For this method, the seed should be liberally applied. If Orchard-Grass is sown with Clover, 2½ bushels, (21 lbs.) of the former, and one peck (15 lbs.) of the latter per acre, will be sufficient. If Timothy is sown, a peck (12 lbs.) should be used

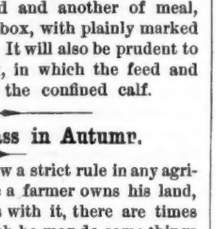


Fig. 1.—FASTENING FOR STANCHION.

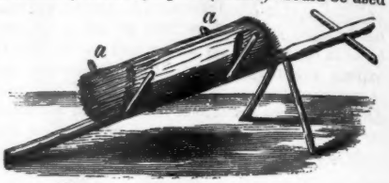


Fig. 2.—A CORN SHOCKING HORSE.

with the same measure of Clover. If the soil is low and moist, a bushel (13 lbs.) of Red-top per acre, will be desirable to take the place of half the above mentioned quantity of Timothy. If Kentucky Blue-Grass is to be sown, a bushel (12 or 13 lbs.) per acre is a proper quantity, mixed with Timothy and Clover. For a pasture, nothing can surpass a mixture of 8 lbs. of Red-top; 8 lbs. of Kentucky Blue-Grass; 13 lbs. of Orchard-Grass; 6 lbs. of Timothy, and 8 lbs. of Red-Clover. This produces an herbage that gives an early and late, as well as a good mid-season growth; the different grasses coming in succession; as one fails it is followed by another.

Hints and Helps for Farmers.

FASTENING FOR STANCHIONS.—"C. F. A.," Granville Ferry, N. S., sends a sketch of a wooden spring used by him as a self-acting catch for cow stanchions. The shape of the spring is shown at *a*, fig. 1, and it is affixed in the manner shown below. As the movable stanchion is pushed up, the spring is raised, and when it is in place, the latter drops behind it and holds it closed firmly and safely.

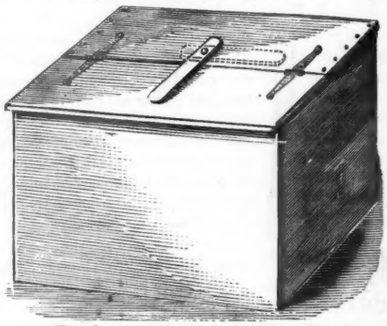


Fig. 3.—FASTENING FOR FEED-BOX.

A CORN SHOCKING HORSE.—"F. A. P.," Dudley, Mass., sends a drawing of a corn shocking horse, provided with a rack for holding a bundle of straw for bands, which is something novel, though the horse itself is not. The horse is used in the ordinary manner, by setting up the corn against the cross-bar at the end, which is movable in a hole bored through the pole. The bar is drawn out when the pole is to be moved for the next hill. The straw lies upon the rack made by the pins, *a*, *a*, figure 2. The legs of this horse are 2½ feet long for short corn, and proportionately longer for taller corn.

A TIMBER DRAIN.—"A Subscriber" sends his method of making a cheap drain of timber. This is made by placing short pieces of stout plank, diagonally, across the ditch, as shown in figure 4. In place of plank, pieces of round timber split in halves, will answer a good purpose, and if the ditch is partly filled with small brush of pine or hemlock, the drain will be durable enough to pay for the labor.

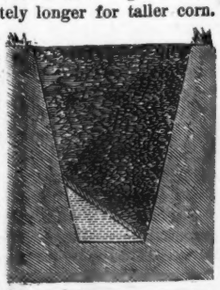


Fig. 4.—A TIMBER DRAIN.

FASTENING FOR FEED-BOX.—"J. T. McL.,"

Beatty, Pa., sends a description of a fastening for a feed-box by which a trespassing animal is prevented from getting access to the meal, as is sometimes done accidentally, even in the best arranged barns or stables. It consists of a bar of wood pivoted across the top of a feed-box (figure 3), which may be turned over the lid when the box is closed and pushed aside when it is to be opened. There are cows and horses which have sufficient sagacity to lift the lid of a feed-box to steal the meal; but this fastening will be beyond the ingenuity of the most sagacious and intelligent of our four-legged thieves.

Supplying Milk to the Consumer.

The production and selling of milk, while it should be profitable to the farmer, is, as ordinarily conducted, one of the poorest kinds of business in which he can engage. He is not only miserably paid for his product, but he is robbed by dishonest persons, some of whom skim his milk in transit, and by others who water it; thus they not only rob the producer of his property, but "filch from him his good name" and leave him "poor indeed" in both ways. The milk producer consequently lives under a cloud of suspicion, but fortunately, he is, as a general thing, undeserving of it. As a rule, the milk farmer is honest, and sends pure milk to market; the milk may not be remarkably rich, because ordinary cows, fed upon grass, will not give rich milk. It is quite unreasonable to expect, that a farmer who receives the miserable sum of a cent and a fourth per quart for his product from the city dealers, will be, or can be, philanthropic enough to feed costly cotton-seed, or palm-nut meal, or even corn-meal, for the purpose of enriching it and making it rich in cream. The milk farmer knows that while he gets 1¼ cent for a quart of milk, the railroad charges 1¼ cent, and that the dealer and peddler, between them, get 5 or 6 cents per quart. This does not seem to him to be a fair division, and yet the farmer is helpless, both against this oppressive division and the exasperating dilution of the milk, which adds still more to the profits of those who distribute it to the consumers. There are some honorable and upright milk dealers in the cities, but there are also those whose nefarious ways are occasionally discovered. But the truth is, that the milk business is rarely satisfactory to either producer or consumer, and the trouble lies somewhere between the two. As there are means of surmounting all difficulties, this one is not beyond the reach of the enterprising milk farmer. There is a market always open for something that is really better than the ordinary quality. Butter, cheese, meat, bread, fruit, milk, and every other product that is of extra good quality, and is put up in a better shape than usual, will find a ready and profitable market. Just now there has been favorably introduced into the market pure, good milk, put up in sealed bottles holding one or two quarts, by which the consumer may be certain that the milk will reach him just as it came from the cow. Some time ago we illustrated a French method of distributing milk in bottles; but like most French affairs it was not well adapted for our more off-hand business ways. We here illustrate a practicable method of packing milk, in use in a Connecticut and a New Jersey dairy. The former

Fig. 1.—MILK CAN.

Fig. 2.—MILK CAN AND SKIMMER.

uses the bottle with glass covers, and sealed with a ring of cork and metal clasps, shown at figure 1; the second dairy uses this same bottle, and also that shown at figure 2, which has a glass cover screwed down upon a rubber ring, and has also a convenient handle for carrying it. The bottles are expected to be washed clean by the purchasers of the milk, as soon as emptied, and before being returned to be refilled. The extra labor and the use of the bottles cost something to the dairyman, which he, however, gladly shares with the consumers, who are supplied with pure milk with considerable unusual cream upon it, arriving sweet, fresh, and clean, and in excellent condition for keeping. They also have the use of a bottle in which the milk can be kept protected from the air until needed; and all these for no more, or for very little more, than they have been paying for the poor milk usually served to them from the peddler's cans.

This method of distributing is both convenient and economical, as it saves much of the waste made by frequent measurements, and loss of quality by constant repeated stirrings and disturbance of the milk in the cans and consequent exposure to injurious atmospheric influences. The bottle shown at figure 1 has a comparatively narrow neck, which to some extent prevents much movement of the milk; while that at figure 2 has a wide mouth, that renders the removal of the cream easy, by means of the dipper, shown in the engraving. The cream may also be separated by inverting the glass cover, and holding it close to the mouth of the jar; by inverting the jar, the cream may be floated to the top of the milk, which, by careful management

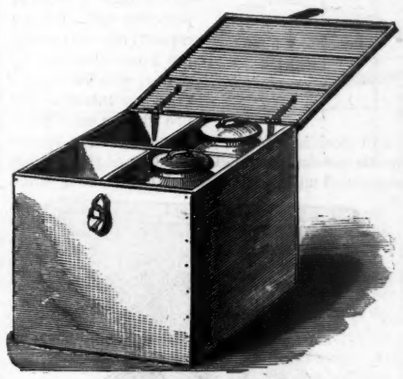


Fig. 3.—ICE-BOX FOR MILK.

of the cover, may be all drawn off, leaving the cream by itself, so that it may be saved for use separately. The bottles here illustrated are of beautifully clear glass; and are engraved from samples furnished by the "Dairy Supply Company" of this city, who have taken great pains to hit upon a vessel which shall be equally acceptable to both producer and consumer. A hint may here be given in regard to the delivery of milk in cans of the kind used by milkmen. In hot weather it is difficult to keep the milk sweet without ice. A method of using ice for this purpose is shown at figure 3. It consists of a box made of pine or ash, with rabbetted joints, tightened with white lead and fastened by screws, so as to hold water. It is divided into partitions, as shown, and thoroughly painted or oiled, or the divisions may be made of zinc. These are large enough to admit some pounded ice around the cans. The delivery cans are placed in these divisions and packed with broken ice; a piece of thick woollen blanket is put over the tops of the cans and the cover shut down. With a box of this kind thus furnished and used, the milk may be kept at a temperature of 50 degrees at the end of a route of several miles, if it is cooled to 40 degrees at the start. To cool the milk to this temperature, a Cooley Creamery, with 50 to 70 lbs. of ice daily for 300 quarts of milk, will be found convenient and effective; and it may also be used economically to keep over milk from one day to another in the best condition, a matter with which many dairymen experience much trouble. The above quantity of ice is sufficient after the creamery has been cooled down.

Carriages for Moving Milk.

A correspondent sends a plan for moving milk from the stable to the dairy house. This work is usually done by carrying the pails in the hands, and

Fig. 1.—MILK CART.

is slow and troublesome, requiring several trips before it is completed. In this proposed method, a carriage is provided, of which a plan is given at figure 1. This shows a frame mounted on wheels, having a box to receive a large can of milk, and a foot-rest which supports the handle. At figure 2 is a strainer used to strain the milk the second time, as it goes into the large can; this has a wire gauze, and a fine muslin cloth tied below this, serves to further remove any impurity. Another plan used in a dairy known to us, is shown at fig. 3. This is a light carriage having several divisions in each of which a deep can can be placed, and the whole quickly and easily moved to the dairy and pool.

Fig. 2.—MILK STRAINER.

Woodland Pastures.

The clearing of woodland for a pasture, may be cheaply done without burning. "Time is money" in agriculture; and by taking time, the expenditure of money may be saved; just as by spending money freely, an immediate result may be gained. When the money can well be spared, and it is spent judiciously, it can be made to return a larger interest in agriculture, than in almost any other industry. A hundred per cent is often returned in one year, or even less, by skillful management. But farmers must often learn "to labor and to wait," for want of sufficient capital to do as they might wish. In clearing rough woodland to be seeded to grass, the fine brush may be spread about, all else having been cut and removed for use or for sale, and the seed sown directly. The fact should not be overlooked, that much small wood may be profitably cut up for domestic use, that would otherwise be burned on the land, and comparatively wasted. The first shower will take the seed down into the soil or among the decayed leaves, where it will find

Fig. 3.—MILK CART NO. 2.

a congenial seed-bed, and spring up readily. The cattle may be turned into the field forthwith, where they will find some agreeable food among the sprouting shoots and young growth. By the trampling over the ground by the animals, the dry litter will be broken into small fragments and trodden down, forming a useful mulch, and this will afterwards furnish much fertilizing matter. An excellent pasture may thus be formed, which can be used

until the stumps have rotted and the ground can be easily plowed. A permanent pasture will always be found one of the most valuable parts of the farm, and if in clearing the wood, a few shade trees have been left, it will in many cases be advisable to keep the land in grass, which will, under these circumstances, grow vigorously, and recover rapidly after having been eaten down by the pastured animals.

Corn Shellers and Grinders.

The magnitude of the corn crop has made necessary a corresponding effectiveness in the machinery for disposing of it. To shell more than 1,000 million bushels of corn requires a vast quantity of

Fig. 1.—GEARED SHELLER.

machinery, and the better and more effective this is, the greater the saving to the growers of the crop. The demand for such mechanical helps has greatly stimulated invention, and there are now on the market numerous excellent shellers and grinders, suited to the purposes of the smallest as well as the largest growers, and for the most extensive mills, cleaning as much as 3,000 bushels per day. The value of a machine of this kind may be estimated by considering the fact that 1,000 of them at work constantly through the year, would be sufficient to shell every bushel of corn grown in the United States. A machine of this character is shown at figure 1, which represents the "Geared Sheller" of the Sandwich M'f'g Co., of Sandwich, Ill.; it is adapted to run by the 6 to 8 horse powers used for ordinary threshing. For use in mills, steam power is applied by means of a belt....The same Company has a hand sheller called the "Veteran," shown at figure 2; this is able to shell and clean 300 bushels of corn per day....Another machine, of equal capacity, is shown at figure 3—the "Peerless Sheller," made by A. P. Dickey, Racine, Wis. This is intended to be operated by one person, who can feed and turn at the same time, by having a basket of ears at his left hand. This hand sheller has a capacity of 30 to 60 bushels of ears per hour. It is in feeding corn that we find one of the greatest present wastes of agriculture. The greater part of the crop is fed whole, and of this doubtless one-third is wasted, so far as regards feeding effect. Horses, cattle, and hogs bolt a large portion of

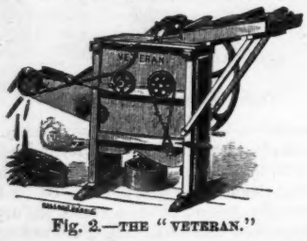


Fig. 2.—THE "VETERAN."

the grain fed to them, and eject it whole and undigested. Frequent and careful experiments, if sufficient practical experience were wanting, have shown that ground meal is much more economical than whole grain, and that, not only is the cost of grinding repaid, but a large gain is made in the consumption of grain. In the writer's practice he has found that a given quantity of grain, fed ground, will keep working horses and cattle in as good condition as twice as much fed unground; and the purchase and use of a feed mill has saved in one year's feeding of 12 head of horses and work cattle as much as 500 bushels of grain, while the animals have been in a more healthy and vigorous condition, with less loss of time from the usual ailments of working animals. Where many animals are fed, a feed mill is indispensable, and where but a few are kept, a small hand mill will be found to pay well for its use. Some time ago (*American Agriculturist*, January, 1878, page 17) we described and illustrated several feed mills for farm use, among others was the "IXL Mill" of the U. S. Wind Engine Co., of Batavia, Ill., which has a capacity of 20 bushels per hour with two or four horses....A farm mill, made by Livingston & Co., Pittsburg, Pa., is shown at figure 4. This is for hand or for power, and is cheap and useful for those who do not need a large or powerful mill. It has a capacity of 4 to 5 bushels per hour when run by power, with 500 revolutions per minute. For use where a small number of stock is kept, for poultry-keepers, or for domestic use for grinding meal, either of the two last mentioned mills will be found useful, as it would

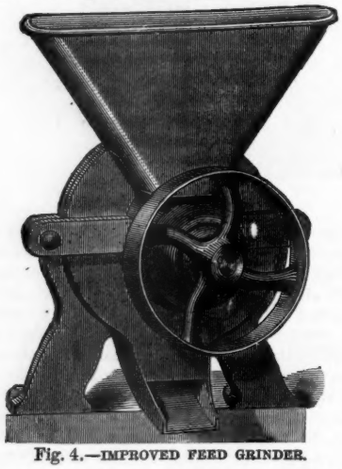


Fig. 4.—IMPROVED FEED GRINDER.

be to those who have a sufficient source of power to make it effective for a larger consumption. ....In the illustration below something new in the shape of feed mills is presented in the "New Improved Feed Grinder," made by the Stover Wind Engine Co., of Freeport, Ill. (fig. 5). This mill is the invention of O. E. Winger, a lad seventeen years of age, and is certainly a wonderful example of inventive genius in a mere boy. Its mode of operation is quite novel, consisting of the oscillating action of a lever which may be attached to the rod of a wind mill by means of an angular elbow; in fact, it is intended for the use of those who have wind mills near their barns; although it may be attached to and worked by a common horse power or even by hand. For attachment to a wind mill it has special advantages. By filling a capacious hopper it may be left to run all night as well as in the day-time, and needs no attention, working while the owner sleeps. It also utilizes a cheap power, which would otherwise have intervals of idleness or would run empty. The grinder, or mill, consists of a double metal case inclosing three burrs; two of these are stationary, while the central one revolves; the mill has there-

Fig. 3.—THE "PEERLESS" SHELLER.

fore two pairs of grinding surfaces; in fact, is two mills in one, and does double duty. It will grind fine or coarse by adjusting a set screw, and can be affixed to any wind mill made in the country.

Protection against the Robbing of Robins.

After thirty years of gardening and careful observation of the Robin (*Turdus migratorius*), we are prepared to give him the first place among fruit thieves. We admit he is a comely bird, a fair singer, and in the early part of the season an industrious hunter of insects. But after his brood is hatched, he seems to eschew his old provender, and brings up his whole family upon the costliest products of the garden. No sooner are the June days come, than he perches upon the pear tree, and eyes the strawberries as they redden in the rows beneath him. Before you dream of picking any fruit, he begins to gouge their red cheeks, destroying far more than he devours. He then takes his turn at the cherries, the currants, the raspberries, the grapes, and not satisfied with the smaller fruits, he makes love to the pears, both upon the tree, and as they fall upon the ground. He feeds upon the fairest, and best, of the gardener's products, from June to October. If there is a more tantalizing robber in the village garden, we have not yet made his acquaintance. Yet this sturdy thief is so intrenched in the affections of the household, that it won't do to suggest cold lead for him, or snares, traps, or poison. The nuisance must be abated by gentler methods. We have hit upon one this present season, which is more effectual than anything we have ever tried. Discarded fish-nets are abundant all along the coast, and are sold for a trifle. The menhaden fish-net, or seine, has about an inch mesh, is

Fig. 5.—A FARM MILL.

forty feet in depth, and of any desired length. It sells for about four cents per pound, and a dollar's

worth of it will cover four square rods or more of strawberry vines. With light poles, and sticks, at the sides of the bed, the netting can be spread over the plants so as to exclude all birds from the fruit! It was an interesting sight, after this covering had been thrown over the strawberry bed, to see the Robins perched upon the neighboring trees, and to hear their protests against their exclusion from their favorite feeding ground. It was an impossibility for the birds to reach the ripening fruit. The netting is equally good to protect all the small fruits, and even peas, which are frequently injured by the Cherry bird. The fish-net in the garden is the grand desideratum we have been looking for during these thirty years. We publish it for the benefit of our afflicted fellow gardeners, who do not exactly like to kill Robins, and do like to save a fair share of their small fruits. CONNECTICUT.

Roosts for Turkeys.

The turkey instinctively goes to roost at nightfall, and in its native haunts, takes to the highest trees, in order to be safe from numerous enemies. The domesticated bird has the same instinct, and prefers the roofs of buildings, or the branches of trees, to any perch under cover. Yet if taken in hand when the broods are young, turkeys can be trained to roost in almost any place not under cover. For safety, the roost should be near the house or barn. If left to roost upon fences or trees at a distance from the house, they are liable to be disturbed, or carried off by foxes, or by poultry thieves. The roost should be some 15 or 20 ft. from the ground. Poles of Red, or White Cedar, from 3 to 5 inches in diameter are the best material, and these are the most convenient sizes for the scaffolding upon which the birds are to roost. The odor of these woods is a protection against the vermin which sometimes infests the young birds. The size of the poles, for the roosts, is a matter of importance. It is much easier for these heavy birds to keep their balance upon a large pole than upon a small one. Then, in the freezing weather of winter, the feet of the birds are more completely protected by the feathers. Another advantage of having the turkeys roost together, is the saving of manure. If the ground under the roost is kept covered with muck, or loam, and occasionally stirred, several loads of a valuable fertilizer may be made every season. A roost made of durable wood, like cedar, will last for a lifetime. It is but a little trouble to train the young broods to go to their roost every night. And after the habit has once been formed, they will go to the same roosting place regularly every night. One of the secrets of success in turkey raising, is in having a secure roosting place.

Cats as Farm Stock.—"The harmless necessary cat" is not so well treated as it deserves. One rarely considers that a well kept cat may be more profitable than a cow. If one rat per day is destroyed, the services of the cat may be estimated as at least equal to $100 per year. Let us try to calculate the enormous damage done by 365 rats in one year, to say nothing of the ravages of the numerous progeny of so many vermin. One rat per day is a moderate amount of business for an active cat. Recently the writer counted five rats captured in a stable by one cat in one day, and possibly others were not seen. The cat being well fed, hunted for amusement, and did not eat the prey. This is the principal point in the management of a cat. It should be well and regularly fed, for rats are unwholesome food. They are infested with larvæ of tape-worms, and cats are frequently tormented with the mature parasites in consequence of devouring diseased rats. When kept free from hunger a cat will watch more patiently, and will only occasionally devour a rat or a mouse. The most healthful food for a cat is a mixed animal and vegetable diet. Milk and bread; a few potatoes with meat gravy, or a little fat, and a sprinkling of salt, with an occasional scrap of meat, are excellent food, and will keep the animal in good health. A farm can usually support four or five cats profitably, and these should be chiefly males, and the majority of these should be castrated. A castrated cat will grow to an enormous size, and if of a good breed, as the Maltese, will make a superb hunter.

Cheap Sheds and Barns.

Much money is wasted in building sheds and barns of needlessly heavy timber. No timber need be larger or stronger than is sufficient to hold up the roof, and 4x4 studding or posts, will do this. Where strong winds prevail, much may be saved by having the buildings low. Indeed there is a saving anywhere, by having everything as near the ground as possible. The common idea that high buildings are the cheapest, because roof space is thus saved is erroneous, and it should not be forgotten that a three story barn must necessarily have a very strong and heavy frame to support its own weight, as well as the side thrust and weight of its contents. A studding, 2x4 inches, will be strong enough for a hay shed 8 feet high at the eaves, while one 16 feet high will spread, and sometimes burst with 6x6 timbers. Thus it may very often be found better to take up more ground, and make twice or three times as much roof surface, than it would be to

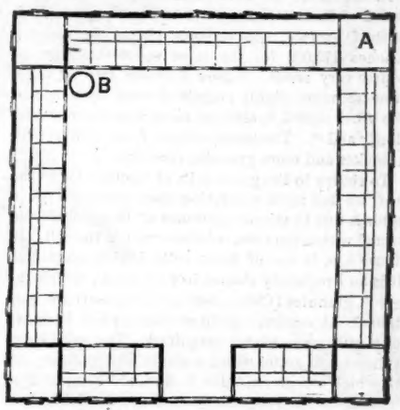


Fig. 1.—PLAN OF CATTLE-SHED.

save in floor and roof space, by building higher. We give here a plan of cattle sheds, recently built at a cost of only $15 per head of the cows sheltered, and for comfort and convenience, they are all that can be desired. To accommodate 10 cows in a shed costing $150, is certainly more desirable than to build a barn costing $1,500, that will supply no more room. Where economy must be very closely considered, this matter is well worth studying, and the plan here given, will furnish a very good text for it. At figure 1 is a plan of a shed having 41 box stalls, each 6x8 feet, and separated by boarded partitions 4½ feet high. The shed is 9 feet high in the front, 7 feet in the rear, is 12 feet wide, and 90, or 100 feet long. The roof is of boards. The frame is made of posts set in the ground, with a 2x4 inch plate

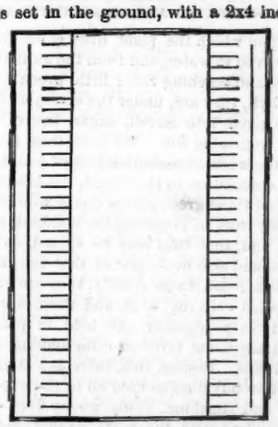


Fig. 2.—PLAN OF CATTLE-BARN.

and girts of the same size where needed. There is a feed passage leading from a room in one end (*A*, fig. 1), for preparing the feed which traverses the whole length. There is a feed trough in each stall, and a bar or pole is fastened along the whole range of stalls, 18 inches from the top of the front partition, by which the cattle are prevented from approaching the front too closely, and mounting the feed troughs, or putting their feet into them. The cows are kept loose in the stalls, unless otherwise desired; in which case they can be fastened to rings screwed to the sides of the stalls. A cistern, which collects the water from the roof, is made at *B*. The front of each stall has a double door, so made that the upper part may be left open for ventilation. Ventilating apertures may be made above each door, for use in cold weather. The sheds are arranged in a square, as shown, with a gate at one side for entrance into the interior yard. The yard will give room for exercise, and racks may be provided in it, for feeding green fodder, hay, or straw. The plan is admirably adapted for the soiling system of feeding, and the making of a large quantity of manure, while 40 or 50 cows are provided with comfortable room, at a cost of $600 or $750 only. In many cases, the value of the manure saved by soiling cattle in such a shed, will repay its whole cost in one year. A section of the interior is shown at figure 3. At figure 4 is a section of a cheap barn and stables connected. The building may even be brought lower at the eaves, and provide pens for pigs and calves, or sheep, or open sheds for tools, etc. In this way, it is protected from sweeping winds, which can have but little effect upon it. The central space is used for storing hay or grain, or for thrashing, and the side spaces for stabling cattle. Three and a half feet in length of floor space, will accommodate two head, so that a 70-foot barn will hold 40 head, and provide abundant room for the crop of 100 acres, at a cost of about $10 per running foot. Light timber only is needed, and rough posts set in the ground, will make the basis of the frame. The plan of the building is shown at fig. 3. It is arranged to be 70 feet long, and 50 feet wide, with the central space 26 feet, and the wings each 12 feet wide; wide doors are made at each end, and also through the

Fig. 3.—SECTION OF INTERIOR.

Fig. 4.—SECTION OF BARN AND STABLE.

center, and the stanchions or stalls in the center are movable, and may be easily taken down when it is necessary to use the central cross passage.

Use of Capital in Agriculture.—It was a shrewd remark made by an old farmer when an advocate of high culture was advising the use of costly methods, and enforced his ideas with the statement that the expenditure, although very large, would pay a good interest; "but how about the principal? when will that come back again?" he was asked. This is worth thinking of before one sinks money in improvements that are not permanent and do not add an actual value to the real estate. A drain; a well; a building; the clearing of land, and such permanent improvements, are worth all they cost for many years, and the profit from their use may be legitimately considered as interest on an actual investment. But a living animal, fertilizers, seeds, plants, and other short-lived property, should pay back not only a large interest, but the principal as well, if they are to be profitable. The expenditure of $100 in fertilizers ought to return $200 or more in the crop, else the cost and interest on that, and the labor involved, are not returned. This is a matter that needs close figuring and clear foresight before one invests money.

Barn Yards.—The condition of the yards and stock pens, should be well looked to at all times. There are several reasons for this. Chief among

these are the comfort of the cattle, and the quantity and quality of the manure. The bedding should be sufficiently deep and compact, to absorb the moisture and cover the droppings, and get not so much so, as to leave a mass of mixed straw, in place of good manure. It should also be amply sufficient to keep the animals clean and comfortable. The frequent summer showers should also be provided for, and the hollow places in open yards should be so well littered, that pools are not formed, or if they are, that they are covered over or filled with straw, or other proper absorbents. In course of time, when it comes to be admitted and believed, that the making of good manure, is a sufficiently important part of the farm business, to receive the consideration it deserves, we shall doubtless have before long covered yards and sheds, expressly for the making of manure.

The Leaf and Its Work.

The leaf has been called the laboratory, or workshop of the plant, and a view of its interior should interest every cultivator. Let us examine, as for example, a leaf from a Lilac bush (fig. 1, *a*); we find here two principal parts, namely: the frame work, consisting of the stalk, mid-rib, veins, and veinlets,

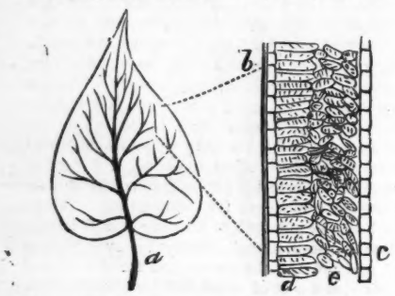


Fig. 1.—LILAC LEAF AND SECTION.

and the soft green "pulp" which fills up the space between the fibres of the frame-work. The "skeleton leaves," often made for ornament, have all of the soft green part removed, and only the frame-work remains. To look more closely into the green tissue or "pulp," a thin cross section of the leaf must be made, as indicated by the short, dark line from which the dotted lines, *b*, proceed. Having made a very thin slice by means of a sharp razor, we place it upon one side on a moistened strip of glass, and look at it with a Compound Microscope. We find that the section of the leaf consists of a number of oval and roundish bodies, or *cells*, *d*, *e*. We also notice a difference between the two sides of the section—on the upper side, *b*, there is a row of small, clear cells. This row of cells belongs to the skin of the leaf (*Epidermis.*) A similar layer of cells, *c*, is seen on the under side. This skin, or epidermis, covers the whole leaf, and from many leaves, such as the "Live-forever," it may be peeled off as a thin transparent film. Beneath, and

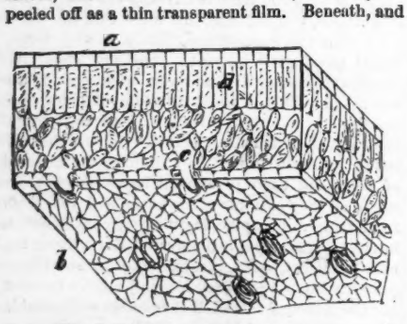


Fig. 2.—SECTION AND SURFACE VIEW.

next to the upper layer of epidermis, there is a row of long cells placed closely side by side, below which the softer tissue of the leaf is found, its cells being irregularly placed and touch one another at only a few points. There are many open places between the cells, called intercellular spaces. In the epidermis of the under surface (and to some extent the upper) of the leaf are small openings, or breathing pores, the *stomata*, which consist of an orifice surrounded by, usually, two *guard cells*. In figure 2 a very small part of a leaf is shown in section, *a*,

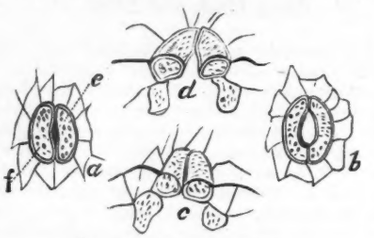


Fig. 3.—BREATHING PORES.

d, a portion of the lower surface, *b*, in view, with a number of these stomata open, and in place, *c*. The guard-cells—which are of a green color—are so delicately adjusted that they will contract or enlarge according to the conditions of the atmosphere, thus closing these little mouths in dry weather, and opening them when circumstances demand.

In the Lilac we have estimated that there are 18,000 of these minute pores to every square inch of leaf surface, but in some plants the number reaches 170,000 for the same space—they are of course very small. Figure 3 shows two of these stomata, more highly magnified—one open, *a*, and the other closed, *b*, also the same seen in cross-section, *c* and *d*. The guard-cells, *e*, *f*, are darker, with a thicker and more granular contents.

To return to the green cells of the interior of the leaf, we find upon separating them that their green color is due to minute granules of that color contained within the thin, colorless wall of the cell. In figure 4, *a*, is one of these cells, highly magnified. It is an irregularly shaped bag or sac in which the green granules (*Chlorophyll* or leaf-green) are contained. A separate grain of Chlorophyll is shown at *b*, still more highly magnified. The millions of Chlorophyll grains which a single leaf contains, and to which its green color is due, are composed of *protoplasm*, and together constitute the laboratory of the leaf, in which the many wonderful changes are wrought whereby the food which the plant gets from the soil and the air is made into the organized material upon which animals live. The crude ma-

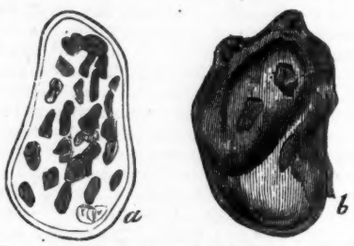


Fig. 4.—LEAF-CELL AND CHLOROPHYLL GRAIN.

terials upon which the plant lives come from the soil dissolved in water, and from the air in the form of gases, and reaching these little green grains of Chlorophyll, they are, under the action of the sunlight, changed into starch, sugar, and other products of vegetable life. We have thus found the seat of the work of assimilation, but *how* it is done is mere speculation to the wisest. It is well established that these green grains do the wonderful and important work of preparing the materials for plant growth, and, that they may be spread out to the sunlight, and also be so placed that the crude elements can reach them readily, they are stored in their walled cells (fig. 4, *a*), and these are packed rather loosely together and held in place by a strong transparent layer of cells making the skin or epidermis. Besides this, there is a stout frame-work of woody fibre to hold all in full exposure to the air and sunshine. This woody fibre also connects the leaf with the roots, so that the watery solutions from the soil may be brought to the Chlorophyll grains in the leaf. These solutions, as taken up by the roots, are extremely dilute, and have to be "boiled down" or concentrated; this is done in the leaves under the heat of the sun, and the watery vapor as it forms must have a ready place of exit. This is amply provided for by the many stomata in the epidermis of the leaves. The amount of water that is thus transpired is enormous, and is reckoned by tons in a single day from an acre of ordinary vegetation. These same openings provide for the admission of the carbonic acid gas from the atmosphere, from which the carbon is taken to form an important constituent of the various products of the plant, while the oxygen set free is returned to the atmosphere.

Bone as a Fertilizer.—Preparation.

For about 30 years bones have been treated with acids, to reduce them to a soluble condition, or to break them down into a fine powder. When thus treated the residue is known as superphosphate of lime. But we now speak of them in their natural condition, and refer to methods of preparing them for use. Every farmer in the country can save a considerable quantity of bones of home production, and by a little trouble and attention can collect a large quantity from the dwellers of villages in his vicinity. We once gave notice to the boys in a village of 5,000 inhabitants, that we would pay 12½ cents a bushel for all the bones brought to a certain vacant lot; as the result more than 60 bushels were found and brought in wheelbarrows and baskets. Two boys who worked together, struck a "find" in an out of the way place, and from that and other places accumulated 24 bushels, and were very rich with their $3 received for them. In this way one can often secure at least as much bone as will return to his land a large portion, if not the whole, of the annual waste of phosphates. To overcome the difficulty of making use of them in a raw and unbroken state, the bones may be burned in a slow fire, preferably in a heap of brushwood, chips, or similar refuse. By slow burning all risk of waste from over-heating is avoided. When burned the bones are easily crushed to a fine powder, and then contain all the substances found in raw bones, excepting the nitrogen. This loss, however, cannot be helped, and it is better to submit to it than to neglect to use the bones.

By grinding raw bones in powerful mills they may be reduced to a fine powder, and in this condition are known as ground bone, bone dust, bone meal, and bone flour, according to the coarseness or fineness to which they are reduced. Thus prepared they are articles of general merchandise, and are kept for sale wherever bones are to be procured, or the prepared bone is in demand. The raw, unbroken bone is worth in the market about 1 cent a pound, when ground it is sold at prices varying from 1½ to 2 cents a pound by the ton. When the bone is "raw," that is, in its natural and fresh condition, it contains all its nitrogen; but when steamed to extract glue, the nitrogen in great part is removed, and the bone is less valuable. On account of the difficulty of preparing bone without the requisite machinery, and the cheapness of the prepared article in the market, it is always preferable to procure the ground bone made by reliable manufacturers; otherwise the bones can be collected and prepared by burning, as above mentioned. Bones are valuable to put into the soil under grape vines and fruit trees. Clusters of roots will grow around and feed upon them for many years, or until they are entirely used up. They can be broken with heavy hammers, or even be put in whole—a peck to a half bushel scattered about in the soil where they will be reached by the roots.

Deep Cans.—The convenience and economy of space afforded by the deep can system of setting milk for cream, is more and more apparent as time passes. Many persons are changing from shallow pans to deep cans or pails, but we have not heard or known of one who has changed from deep to shallow setting. There is no necessity for a pool or spring, now that an excellent creamery or setting box in which ice-water can be used, is to be procured at a reasonable price. The Cooley Creamery answers every purpose of a cold spring, with some advantages that the latter lacks. The yield of butter may not be greater, but it is of better quality with the deep pans, and will keep much longer.

Spring Bitter-Vetch.

Spring Bitter-Vetch is a not very elegant name for one of the finest of spring flowers. *Orobus* is quite as easy and a better sounding name. This, by the way, has a rather curious origin; it comes from the Greek words meaning *to excite*, and *ox*; this does not imply that it will madden an ox, like a red flag, but the *Orobus* of the ancients was a plant used to fatten oxen. The plant is a perennial, growing about a foot high, with numerous stems, which form a handsome clump. The engraving, from a branch, indicates by its leaves and the shape of its flowers, that it belongs to the Leguminous, or Pea Family. The leaves, with two or three pairs of leaflets, are of a dark shining green, and in the axil of each, a flower-cluster is produced. These clusters are in such numbers as to quite cover the plant with flowers, making it a most beautiful object, and one which varies in beauty from day to day, as its colors are singularly changeable. The flowers, in one-sided, nodding clusters, when they first appear, are purple, with some blue and green, and handsomely marked with red veins; in a short time the blue increases, until the whole flower is of that color. The lower flowers in the cluster being the oldest, this change to blue takes place in those first, and very often the lower flowers of a cluster will be of a bright blue, while the upper ones are of a rosy purple, presenting a variety as pleasing as it is unusual. This is a native of Southern and Central Europe, and is not mentioned as new—for it has been in cultivation for over two centuries—but as one of those really meritorious old plants that in the search for novelties are nearly lost sight of. Those who begin to cultivate flowers at the present day, are not aware of the many choice things that have been pushed aside to make room for the plants now so popular. While second to none in our appreciation of the good qualities of new plants, we do not think it necessary, in welcoming these, to discard the old, and while we keep our flower-loving readers advised of the introduction of new things, we think that we do them an equal service in reminding them of the merits of the "old-fashioned" garden favorites. As to this Orobus, we are glad to note that Mr. Robinson (editor of "The Garden," London), in his latest edition of "Alpine Plants," says: "This is one of the most charming border-flowers that begin to open in that sweet season, the end of April and the beginning of May," and that "It is one of the best ornaments of the mixed border in cultivation."—Though not properly an "alpine," it may be used upon the rockwork, but is quite at home in the ordinary garden bed. It was a great favorite with the late Mr. M'Nab, who, at the Royal Botanical Garden, at Edinburgh, grew it in long lines and in other attractive ways. With us it flowers later than in England, and is in perfection in the last half of May. It may be raised from seeds, the plants blooming the second year, and when strong enough, the clumps may be divided; or it may be obtained from most dealers in hardy plants.

SPRING BITTER-VETCH (*Orobus vernus*).

EDELWEISS (*Leontopodium alpinum*).

The Edelweiss.

Among the noted plants of the higher Alps is the Edelweiss—a name which may be translated into "Nobly-white." Its botanical name is *Leontopodium alpinum;* the first, or generic name, being from the Greek words for *lion* and *foot*, as some one has fancied a resemblance between the clusters of flowers and the foot of a lion; the specific name, *alpinum*, of course refers to the high localities in which it is found. Its relatives with us are found in Cud-weeds and Everlastings, well known species of *Gnaphalium* and *Antennaria*, common everywhere, and all belonging to the great Composite Family. The Edelweiss is a perennial, with stems 4 to 8 inches high; these are furnished with narrow leaves, and bear at the top a crowded cluster of small heads of inconspicuous yellow flowers. Immediately beneath the flower clusters is a star-like whorl of oblong, spreading leaves. All parts of the plant are very woolly, but this whorl of floral leaves is especially so, and it is the white cottony down, borne so abundantly by these, that constitutes the chief beauty of the plant; in this, as in many other cases, the plant is not valued for its flowers, but for the more conspicuous parts which surround them. In its native country there is some romance connected with the plant. If an alpine maiden receives a bouquet of Edelweiss, it is an indication that her lover has risked the fatigue and dangers of an ascent to the higher Alps, where only it grows, and hence is very much in earnest. It is one of the plants offered to travellers in the Alps, who purchase the small bouquets as mementoes of their journey. There has been much nonsense written about the Edelweiss, such as, being a plant of the high free air of the most elevated peaks, it would die when taken from its native home to lower grounds. Even Veriot, a recent writer on alpine plants, says that it can only be cultivated in pots of a special mixture of broken peat, crushed slate, etc. Notwithstanding this statement of so high an authority, we saw, a short time ago, upon a rockwork in the grounds of Woolson & Co., Passaic, N. J., a fine clump of the Edelweiss in full bloom. Upon inquiry we learned that the plants were set out last fall, and without any preparation of soil whatever. They were flourishing as satisfactorily as could be wished, and seemed to be as much at home, upon a rockwork a few feet high, as they could have been upon the most elevated Alps. The chief advantage of a rockwork for such plants is in securing thorough drainage, and we have no doubt that where this is provided in the border, the plant would flourish there. The engraving, of one of the smaller plants from the grounds above mentioned, gives a good idea of the appearance of this interesting hardy plant.

The White Grub.—In a former article we have advised catching and killing the parent insect as the most effective method of preventing the ravages of this most destructive insect. The parent insect is the brown beetle known as May-bug,

June-bug, and Dor-bug, and we suggested knocking it from the trees where it harbors, and catching it upon sheets. A correspondent, "R. H. R.," Rocky Hill, Conn., writes: "There is near the house a large Weeping Willow, and the beetles come to feed upon it. I take a lantern and a wash-tub, with a little hot water or strong soap suds, set the tub under the tree, and hang the lantern over the tub. The beetles fly against the lantern and drop into the water, where they are drowned. You would be surprised to see how fast they are caught. I have caught about four quarts in two evenings. The trap is not patented."—We do not doubt the utility of this method. Where the insects are on low bushes, or in the grass, and other small plants, the lantern may be set upon a stone placed in the tub to form an island. This and other destructive methods persistently followed will materially diminish the white grubs.

The Pear Slug-Worm.

More inquiries have been made about the "Slug-Worm" that attacks the pear, and more specimens have been sent than in any previous year, and as we have not noticed it to be unusually abundant, we infer that our friends keep a closer watch upon their trees. It is not, as some suppose, a new insect, as we have the record, quoted by Harris, that the year 1797 was made memorable in Massachusetts by their abundance; they completely destroyed the foliage, and the air was filled with a sickening odor. We can best answer the questions as to their history, by the aid of an engraving borrowed from Packard's "Guide to the Study of Insects." The parent insect is a small fly shown at the upper part of the engraving, with a line to show its natural size. The body of the fly is glossy black, and its transparent wings show changeable colors. They appear late in May, or early in June, and finish laying their eggs in about three weeks. The larvæ or Slugs (*a*), are at first white, but soon become covered with an olive-green slime, which gives them a most repulsive appearance. When full grown, they are nearly half an inch long, largest in front, and are able to swell out the forepart of their body. They feed upon the upper surface of the leaf, from which they eat all the green pulp, leaving the frame-work untouched. The leaf in the engraving, shows the appearance of these naked spots, though when several are at upon one leaf, they leave only the skeleton. Their growth is completed in 26 days, during which they change their skin five times; they then fall, or crawl, to the ground, which they enter to the depth of a few inches, make a chrysalis, and in 15 days come out as perfect insects, or flies, to lay eggs for a second brood. The second crop of Slugs appears late in July, or early in August, and the chrysalids from these, remain in the ground until the next spring. Being two-brooded, it is desirable to attack the early brood when possible; at this time, the second brood will want attention. As they fortunately confine themselves to the upper surface of the leaves, it is not difficult to kill them. Lime air-slaked, or perfectly and carefully slaked, with just enough water to cause it to fall into a fine dry powder, is the most effective application; wood-ashes is the next best. Either of these placed in a bag of some open fabric, tied to a pole, may be dusted over the foliage. If but a very little touches the Slug, it is held fast by the slime, and soon finishes the creature. Hellebore, used as we have directed for currant bushes, is said to be effective. It has been stated, that fine road dust thrown over the foliage, would kill the insect as well as anything else, but it is found, that while this by adhering to the skin annoys the insect greatly, and causes it to drop from the leaf, if near the time to change its clothing, the Slug will cast off its old and soiled skin, and go to work anew. The name of this insect is *Selandria Cerasi*. The meaning of *Selandria* does not appear to be known, the specific name *Cerasi*, means "of the cherry," as it attacks the Cherry as well as the Pear, and has also been found on the Plum, and Mountain-Ash. The Rose-Slug is the larva of another member of the genus *Selandria*, and others still, attack the Grape and Raspberry.

PEAR SLUG AND FLY.

The Use of the Feet in Sowing and Planting.

BY PETER HENDERSON, JERSEY CITY HIGHTS, N. J.

[The following are essential portions of a paper read by Mr. Henderson at the Annual Meeting of "The American Association of Nurserymen," held at Cleveland, Ohio, on June 18th last. The subject is an eminently practical one, and in the discussion which followed the reading of the paper, some of the most experienced nurserymen in the country gave their testimony as to its importance. The venerable Robert Douglas, of Waukegan, Ill., eminent as a grower of seedling trees, and especially evergreens, spoke from his 40 years of experience as to the great importance of having the facts here presented generally understood and acted upon.—ED.] After some introductory remarks Mr. Henderson said: Though I have been extensively engaged in gardening operations for over a quarter of a century, I candidly admit that I did not, until a few years ago, fully realize the importance of the proper use of the feet in sowing and planting. Particularly in the sowing of seeds, I consider the matter of such importance that it can not be told too often or emphasized too strongly. The loss to the agricultural and horticultural community by the neglect of the simple operation of *firming* the soil around seed must amount to many millions of dollars annually. In many sections there was, this year, little or no rain, from the middle of April to nearly the end of May. This was particularly the case in the vicinity of New York City, where we have hundreds of market-gardeners who cultivate thousands of acres of Cabbages, Cauliflower, and Celery, with whose seed-beds the dry spring made sad havoc. In the way of plants to set out, there is not one-fourth of a crop of Celery, and of Cabbage and Cauliflower plants they have hardly half the usual number; and this failure is due to no other cause than that they persist in sowing their seeds without even firming the soil by rolling.

We sow annually about four acres in Celery, Cabbage, and Cauliflower, for the purpose of raising the plants, of which probably five millions are produced, and which we never fail to sell mostly to the market-gardeners in our immediate neighborhood, many of whom have even better facilities than we have for raising these plants, if they would only do as we do, *firm the seed after sowing*. After plowing, harrowing, and smoothing the land, lines are drawn by the "marker," which makes furrows about two inches deep and a foot apart; one man sows the seed and another follows him, who, with the ball of the right foot, presses down his full weight upon every inch of soil in the drill where the seed has been sown; the rows are then lightly levelled longitudinally with the rake, a light roller is passed over them, and the operation is done. With this method our crop has never once failed, and what is true of Celery and Cabbage seed, is nearly as true of all other seeds sown during the late spring or the warm months of summer.

On July 2d in 1874, I sowed, as an experiment, 12 rows of Sweet Corn and 12 rows of Beets, treading in every alternate row of each after sowing. In both cases, those trodden in came up in four days, while those not thus firmed, remained 12 days before starting, and would not then have germinated had rain not fallen, the soil being as dry as dust. The result was, that the seeds trodden in grew freely from the start and matured their crops to a marketable condition by fall, while the rows not firmed did not mature, as the seeds were eight days later in starting, and the plants were also enfeebled from being partially dried in the loose dry soil.

In August of the same year, I treated seeds of Turnip and Spinach in the same way; those trodden in germinated at once and made an excellent crop, while those unfirmed, germinated feebly, and were eventually nearly all burned out, the dry, hot air, penetrating through the loose soil to the tender rootlets. Of course, this rule, to tread in or firm seeds after sowing, must not be blindly followed. Very early in spring, or late in fall, when the soil is moist, and there is no danger from dry, hot air, there is no necessity to do so, and at other seasons, the soil may be in a suitable condition for sowing, and yet be too damp to be trodden upon or rolled. In such cases, these operations may not be necessary at all, for if rainy weather ensue, the seeds will germinate of course; but if there is a probability of continued drouth, the treading or rolling may be done a week or so after sowing, if there is reason to believe the seeds may suffer from the dryness.

Now if firming the soil around seed to protect it from the influence of a dry, hot atmosphere is a necessity, it is obvious that it is even more so in the case of plants, the rootlets of which are even more sensitive to such influence, than the dormant seed.

Experienced horticulturists are less likely to neglect this, than in the case of seeds, for the resulting damage is easier to be seen, and hence better understood by the practical nurseryman. With the unexperienced amateur, the case is different; when he receives his package of trees or plants from the nurseryman, he handles them as if they were glass, every broken twig or root, calls forth a complaint, and he proceeds to plant them gingerly, straightening out the roots and sifting the soil around them, but he would no more stamp down that soil, than he would stamp on the soil of his mother's grave. So the plant, in nine cases out of ten, is left loose and waggling, the dry air penetrates through the soil to its roots, the winds shake it, it shrivels up and fails to grow. Then come the anathemas on the head of the unfortunate nurseryman, who is charged with selling dead trees or plants. About a month ago, I sent a package of a dozen Roses by mail, to a lady in Savannah, Ga. She wrote me a woeful story, saying that though the roses arrived seemingly all right, they had all died but one, and what was very singular, she said, the one that lived, was the one that Mr. J. had stepped on, and which she had thought was surely crushed to death, for Mr. J. weighs 200 lbs. While we do not as a practice advise any gentleman of 200 lbs. to put his foot upon the top of a tender rose plant, yet if Mrs. J. could have allowed her weighty lord to press the soil against the *root* of each of her roses, I much doubt if she would have had to mourn their loss.

Look to the Cabbage Worm.

The European Cabbage "worm" is still very troublesome in many places, and unless it is vigorously looked after, great damage will result from its ravages. The butterfly which lays the eggs, from which the caterpillar, or so-called "worm" is hatched, comes early, and, in its several broods, remains during the season, so that the eggs, which

BUTTERFLY-NET.

are deposited on the under-side of the leaves, and the worms are to be looked for at all times. It should be borne in mind that every female butterfly that is destroyed prevents a large brood of worms, and the war should begin here. The white butterflies, with black spots, are often seen like a cloud over the cabbage field, but while mating they are found elsewhere. With a butterfly-net, made

of mosquito-netting, attached to a hoop with a handle, as in the engraving, large numbers can be caught, especially in early morning when their flight is slow. Children will soon become very expert with the net, and when one is caught, a pinch of the upper part of the body, through the net, only anticipates a death that would naturally occur a few days later. Kill all the butterflies possible, as with each female at least 50 eggs, and consequent "worms" are destroyed. The eggs, which are tapering, or bottle-shaped, and prettily marked under the microscope, stand upon end in clusters of 2 to 12, and should be destroyed when found. Still, in spite of all care in killing the butterfly and destroying the eggs, some caterpillars will be found, and these should be attended to—the earlier the better. It must be remembered that the part upon which the worms work is the food portion of the plant, and any thing poisonous, like Paris Green, or Hellebore, will not answer in this case. Ashes and slaked lime have been used by many with success. Hot water—about 160°, just hot enough to kill the worms and not injure the plant is one of the best remedies on the large scale. A weak brine, made with a pint of salt to a pailful of water, applied with a watering-pot provided with a fine rose, is economical, efficacious, simple, and perfectly safe. Whatever application is made, do it early, as the caterpillars soon hide under the leaves of the forming head, and being thus out of reach, may next be met with upon the table.

The Huckleberry Fungus.

Branches of the huckleberry-bush are often sent to us, upon which there is a peculiar abnormal development of the flowers, fruit, or leaves, or all combined. The engraving is made from specimens, which were sent from Steele Brothers, La Porte, Indiana, who state that is very common in that section. The cause of this trouble is a minute fungus, known botanically as *Exobasidium Vaccinii*, and belongs to the great group, which includes the mushroom, toadstools, puffballs, and larger fungi,

HUCKLEBERRY FUNGUS.

but differs from them in its habit of growth; they growing on dead organic matter, while this is found only on living plants and is a true parasite. This fungus assumes many different forms, depending on the species infested, and the part of the host-plant affected. When upon the leaves and branch, it is first manifest in the stunted growth, followed by a thickening of the parts and a taking on of the most beautiful shades of red, scarlet, and orange, thus making the affected branch resemble a large and showy flower, often mistaken for, and gathered as such, for their beauty, by those who see no deeper than color in flowers. When the flowers and young fruit are attacked by the fungus, they enlarge to several times their natural size, and soon become covered with a white powdery surface, which is due to the vast multitude of spores which are formed. In the engraving, some of these enlarged berries are shown in the upper portion of the cluster, with normal ones below; and a twig affected, though not as badly as many we have seen, is given below and to the left. The remedy for this disease is to remove and burn all affected parts.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Measles.

This seems like venturing upon forbidden ground, for I know that the Editor does not want any "remedies" for diseases sent in, nor any dissertations upon particular diseases from "lay-members." But three of my little flock have just passed in safety this way-mark in the progress of childhood, and the subject has interested me so much, that I want to impart such help as I can to mothers who may wish to know how to meet this particular emergency. This is one of the diseases sometimes called self-limited. It is popularly formulated thus: "three days to come out, three days out, and three days to get over it." This is the general rule, but there are exceptions. The first symptoms appear a week after exposure to the disease, though they are sometimes so slight as to escape notice, and the eruption, nine or ten days after exposure, is the first intimation of the presence of measles. It usually seems at first like a severe cold—a cough, running nose, headache, red and watery eyes, with more or less nausea just before the breaking out upon the surface of the body. Often the child plays about as usual—my children did on the first two days, before the breaking out, and the youngest did so every day, except on the fifth day, or on the great breaking out day. Then he lay and slept a good deal. Of course you can not do anything to *cure* the measles. The contagion once fully at work in the system, the disease must run its course, and then the child will be "cured," but by no medicine or nursing of yours. Good nursing may bring it *safely* through, and lack of it, or the opposite of good nursing, may cause its death. Only try to keep the body in good condition, and so give Nature a fair chance to expel the poison in her own way. Keep the skin clean—a bath before the breaking out begins is desirable, and I believe (from actual experience) that a warm bath (decidedly *warm*) very carefully given, so that no part of the body be chilled, is better than any herb teas for "bringing out" the measles well. But neither warm bath nor warm tea is necessary if the body is in other respects in good condition—the bowels open, the stomach nourished by plain easily-digested food without stimulants, the temperature of the room as warm as may be comfortable, the air pure, and no over-taxation of body or mind. I treated the cough that goes with measles as I do all coughs in their beginnings—and this "stitch in time" saves the necessity for treating hard coughs, I find—I put a bandage wet in cool water, and covered by a dry one, around the neck. The great caution universally given is: "do not let the patient get chilled in the least. *Keep warm.*" It is desirable that the measles should "come out" well. The eruption usually appears first upon the head and neck, and spreads gradually downward, fading away first from the head, downward. It begins to appear about the fourth day, if the disease progresses as it should. The great fear seems to be that the measles either will not "come out" thoroughly, or that having "come out," they will "strike in" or disappear suddenly. Getting chilly is the main cause of the so-called "striking in," but improper eating or undue exercise, or mental excitement, may have this effect, and then warm drinks (simple hot water is the best thing) or warm baths, or both, must be resorted to—anything to open the pores of the skin and bring the spots out again. If one does not pass through the measles well, some troublesome disease may follow as a sequel to measles. The most common of these are bronchitis (or "sore throat"), ophthalmia (sore eyes), and difficulty about hearing. One of my little girls complained much of her eyes, wished the room darkened, and wanted a wet cloth on her eyes almost constantly for a few days. I did not let her use her eyes for reading, writing, or sewing, during her recovery, and for some days afterward. The other two had the measles very light, though one of them was as spotted as a person could well be, and speak of their "spots" in the plural number. The one who had the disease most severely was first taken, though I think the other two were exposed at the same time with her, and possibly she might have escaped had she been in equally good health at the time. The others caught it of her, and were a week and a day behind her in the symptoms. The baby went through it all, living in the room with it night and day, without catching measles at all. I was very particular about airing their day clothing at night and their bed clothing during the day, and about ventilating the rooms, sometimes covering the patient all up in bed while I opened the windows, though the spring weather made ventilation usually quite safe. I am told that babes under six months of age seldom catch the measles. It is desirable that children should go through this ordeal in their early years, as the disease goes harder with adults, and is more likely to leave some lingering disease.

Flies in the House.

Yes, I think I see them—in your house perhaps, but not in mine. For I write this before the flies have fairly begun to come, and when you read it they will be buzzing about in the most disagreeable and impertinent manner in dwellings where no care has been taken to keep them out. I have never taken much pains in this respect, but I have suffered the penalty for former neglect until I have resolved to bear it no longer. I have said that I would rather take the bother of the flies than the worry of keeping them out of the house, but now we are all agreed to make an effort to have comfortable rooms all through the house. We have netting on all of the windows, cellar included, and netting on outside doors, with springs to make these shut themselves. It is worth a great effort to have a decent table and eat without quarreling with the flies, to have a quiet place where baby can take his naps in peace, and to have your own early morning dreams undisturbed by buzzing crawling insects. We are ready for the flies now, and I do not think more than half a dozen have got into the house as yet. We shall hunt those down, and if necessary I shall set occasional traps to catch them. For this purpose I have never had anything better than a tumbler partly full of soap-suds covered with a slice of bread cut to fit over the top, with a hole in the center of the bread smeared with molasses, and with molasses on the under side of the slice. The flies crowd together to feed upon the molasses and tumble into the suds and drown.

Where do Flies Come from?

The economy of Nature is very wonderful. They tell us that the mission of flies is to feed upon poisonous matter in the air. They breed in filth and thrive in unclean atmosphere. Then the spiders come to catch the flies. It is hardly a personal matter. Where dwellings are far apart, and the whole neighborhood is cleanly from a sanitary point of view, flies will be scarce, but they will come into your house and annoy you in various ways, however nice your house-keeping, if there are breeding places for flies near by, and if the air that circulates through your house shares the impurity common to the common neighborhood. So you can never afford to attend to your own premises and your own family alone. It is minding your own business to keep an eye on the whole neighborhood. You need not be prying and meddling with other people's affairs, but after you have made sure of setting a good example, try to have every one around you enlightened somehow in regard to healthful living—the necessity for pure air, pure water, and a care-

ful disposal of all waste matter, so that it may not become a nuisance and a poison. Flies come in from out-of-doors. They come from the stables, the compost heaps, the pig-pens, and other out-houses. They seem to spend considerable time and pains cleaning their feet, but the more I think of it, the more strongly I object to their presence in my rooms. They breed fast, and each one may become the parent and grand parent of countless hosts in a single season.

Fig. 1.

A Word about Pies.

I am glad to let "pies 'n things" pretty much alone, but we do like a good wholesome pie now and then. We never use lard for shortening, and seldom have more than one grade of butter, and that the best we can get, though not necessarily the most expensive in the market. For instance, I buy butter of a neighbor who makes it to sell to one regular customer, who pays her the same price the year round, however the market rate may fluctuate. I do not buy her butter, and she does not use it herself, but she tells me frankly that the butter which her husband buys in the country for a little more than half what she gets for her own butter, is every bit as good as hers. I think so myself, having tried both, but her reputation for care and neatness commands the extra price from her wealthy and particular customer. With good butter for shortening, and not too much of it, pie-crust is good and not unwholesome, and cream-crust is better still. But the common lard pie-crust seems to me a sheer abomination as many housekeepers make it. They use too much shortening, and in an unskillful manner, and the taste of the lard spoils the flavor of the pie. It amuses me to see my children refuse it with a wonder how other people can eat it, and why any one ever makes it. They think mamma's pies, even when made with graham flour in the crust, are very much nicer, and certainly no stomach has ever been hurt by them.

Fig. 2.

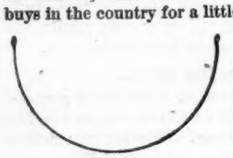


Fig. 3.

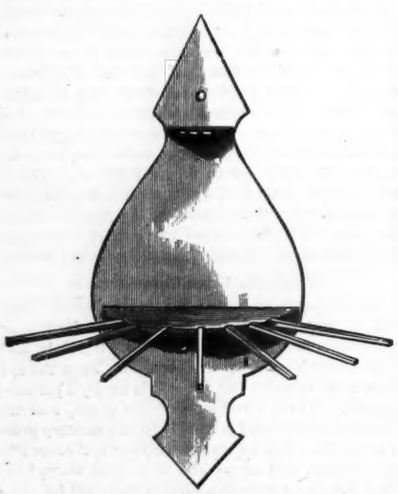


Fig. 4.—RACK OPEN.

I use a *very little* baking powder in pie-crust, mix the dough pretty stiff, but do not knead it, roll it thin, and bake the pie slowly and thoroughly. Several times I have seen complaints about pies running over in the oven, or directions for avoiding this catastrophe. The well-baked rhubarb or pie-plant pie just taken from my oven did not run over a particle, and this is the way we do it: Slice the stalks half an inch long, sugar very plentifully (a teacupful to a large pie), but do not add a drop of water. Wet the edge of the under crust all around and pinch down the upper crust tight upon it. Then have the heat of the oven very moderate, just sufficient to keep the pie baking and no more. An hour is not too long to bake a rhubarb pie, or a pie filled with berries, but a hot oven would boil over the juice and burn the crust in that time.

PLAIN SWEET BISCUIT.—A cup of sour Cream, with half a teaspoonful of Soda, one cup of Sugar, one Egg, a little Nutmeg or Cinnamon, and Flour enough to make a soft dough. Mix very quickly, beating the egg first and putting the dissolved soda and sour cream together last. Roll out half an inch or a little more in thickness, cut into small biscuit, and bake quickly. If your sour cream is only milk, make up the deficiency by a good tablespoonful of butter. These are good made with graham flour. Thick old-fashioned cookies like these are much better for the children (and for me) than crisp cookies with more butter and eggs.

HOW MUCH SODA?—I have before this given the proportions as they were taught to me by careful cooks—a level teaspoonful of soda to one even teacupful of sour milk or buttermilk. This is a smaller proportion of soda than has been advised by another contributor to these pages. But I have been astonished to hear, and to learn by experiment, that only half as much, or one-half of a level teaspoonful of soda to a teacupful of sour milk, is even better, and now I never use more, as I find that this amount perfectly neutralizes the acid in the milk and makes my biscuit and gems even lighter than before, it seems to me. I am more than ever convinced that it is best to steer pretty clear of the use of soda, and this can be done, without falling back on baking powder too. But both are handy to have on hand to use occasionally.

Old Furniture.

As a nation, we are not a lover of old things, but we run after those that are novel. We set to one side, anything that is at all old, and say it has had its day. This spirit is excusable in many things—such as machinery, where rapid progress is made, but it has been carried into all departments of life, and too often in the American youth, extends to a proverbial disregard for his aged superiors. In this general disrespect for aged persons and things, one of its most painful manifestations is the putting out of sight of all old furniture. It is a sorry thing to go into many of the garrets and sheds of country and other houses, and find piled away there, so many articles that were the care and comfort of the former generations of the family. Compare these rejected chairs with those now in use—they are as substantial and easy, and above all, they should be dear to us in memories and associations. We should have more room for memories—we should love the things that our grandfather made, and our grandmother had in daily use—we should keep the old sofa in its appropriate place, where we may rest our weary limbs, and live over the early days of the past, and should we fall into a reverie, and see in our day-dream our good old grandmother, who first folded our little hands to rest on the same old sofa, we should be none the worse for it.

Ants in Lawns.—Whether ants are more numerous this year than usual, or people are giving more care to their lawns than heretofore, we can not say, but we have had more inquiries concerning ants in lawns during the past two months, than we have had in several years altogether. This is one of the afflictions that we have fortunately been spared, and as we cannot speak from personal experience, we must ask for that of others. That a considerable number of our readers have been troubled with ants in their lawns and grass-banks, and have utterly failed to exterminate them, we already know. A list of failures is useful in one sense, as it gives us a record of the "remedies," that do not remedy. What we wish now, is an account of the successes. If any readers have succeeded in routing a colony of ants that had become established in his lawn or grass plot, by means that does not unfit the soil for the future growth of grass, they will confer a great favor upon many, by making it known through the medium of the *American Agriculturist*.

A Clothes-Rack.

A correspondent at Oak Hill, N. Y., sends us drawings of a rack for drying small articles, that is in very general use in his vicinity; this he thinks is more easily made and more convenient than the one given in April last. He says: The back can be formed to suit the fancy, and made of whatever wood may be preferred; if of pine or bass-wood, it may be stained. The upper shelf or rest (fig. 1) for the rods is a semi-circle fastened by screws inserted at the back. It need not be more than one-half-inch in thickness. The lower shelf (fig. 2) should be at least one and one-half-inch thick, and is a semi-circle, the diameter of which is two inches less than the width of the back upon which it is to be fastened. In the rim of this shelf cut a groove sufficiently deep to allow the wire (fig. 3) to be sunken to the depth of ¼ inch. The wire being bent in circular form, passes through the rods or slats, which should be ¾ inch in thickness, at the fastened end, fig. 4, the ends having a thread cut upon them, and passing through the back are fastened by small nuts. It will be seen that the rods are bevelled at the lower end, and a corresponding bevel ¾ inch wide must also be cut on the under edge of the lower shelf at intervals, the number of bevels corresponding to the number of rods required; the rods when in use should be as nearly level as possible, fig. 4. When not in use, they are merely turned up against the upper rest or shelf, as seen in figure 5. In this respect this rack much excels your model in the April number, as it is entirely out of the way, and withal the whole affair is, when properly constructed, quite a pretty kitchen ornament. It is easily and cheaply made.

Fig. 5.—RACK CLOSED.

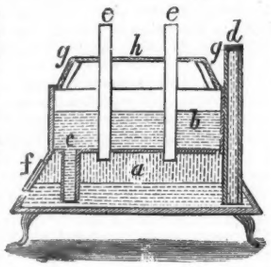
Thermometers.

The weather is said to be the only question upon which we can all agree; but a little observation will show that this is no exception to the general rule of being subject to differences of opinion. Heat and cold are but relative terms to be decided by each individual. Where one person is cold, his next neighbor, under the same circumstances, may be warm, and there is but one way of deciding just how warm or cold it really is, and that is to leave it to a third party which is without feelings, and upon whose decision we can all agree. Such is a thermometer. How often in the times of extremes of temperature we may hear the expression: "I only wish I knew how hot it has been to-day!" or "I wonder how cold it was last night!" Aside from the simple pleasure to be derived from having a thermometer, it is of great use in giving us a true knowledge of the heat of our rooms, at any moment, thus aiding us in keeping them of the proper temperature—of about 68°. It is a good plan for young people to be taught to do something at a particular time, and to make and put down daily observations of the temperature will encourage regular habits, while the record will possess sufficient interest to compensate for the trouble. Thermometers are now so cheap, that everybody may possess one; those of low price are quite as likely to be accurate as those made with an ornamental mounting. The excellence of the instrument depends upon having the tube of equal bore throughout, and the care with which the degrees are marked upon the scale.

Whatever may be added increases the cost without adding to the value. Let us have a thermometer.

Kerosene in the Kitchen.

Soon after Kerosene came into general use for illuminating purposes, attempts were made to use it as a source of heat as well as of light, and stoves of various kinds were devised both for warming small apartments and for cooking. It is to its use as a source of heat in cooking that we would call attention at this time. The first attempts at kerosene cooking stoves were very crude. A large lamp-body to hold the oil, two to four such wicks and wick holders as were used in ordinary lamps, and a frame of some form to hold the cooking vessel, were the essential parts of the affair, and some had a chimney to increase the draft. Though these were difficult to manage, and would often smoke in an annoying manner, they were more or less useful. In almost every household it is often desirable to have a source of heat without making a fire, and in the summer months a small family rarely requires fire in a stove or range more than a few hours in the day, and on many days it does not need even that. In cities and villages where gas is used for lighting, gas-stoves, of various sizes, are much used. In some families all the cooking in summer is done by gas, and in others, where the stove or range is used in cooking the dinner, the gas-stove supplies sufficient heat for breakfast and tea.



LAMP OF "WINDSOR" OIL STOVE.

The majority of people are beyond the reach of gas, and need some substitute. Alcohol, from its price, is out of the question, while kerosene, being very cheap, and having abundant heating powers, is the available substitute, and would come into general use, did people feel that it was *safe*. The number of kerosene stoves that have been invented shows that there is a demand for such an article. They will do all sorts of cooking, and a small family, for several months in the year, can get along with one of these, without any other fire, save on washing days. Stoves of this kind have, in common with gas, a great advantage over coal stoves. The fire is kindled at once, and put out at once; there is no loss of time and fuel in getting ready, and no waste after the cooking is done. When we lived within reach of gas, we found, notwithstanding the cost, as shown by the remarkable contrivance called a meter, (which measures, whether gas is used or not), its convenience so great, that we used it for cooking in summer. Living now where gas can not be had, various kerosene stoves have been tried. Some have been only partly satisfactory, especially in baking; others worked well in every respect, including baking, and we have had as fine bread from a kerosene-heated oven as ever came from one heated by coal. But however efficient the stoves, at first, they would soon be used only occasionally, and then not at all. We found, no matter how much labor was saved, or how much more comfortable the kitchen without a fire in the range, the kerosene stove would be put aside. The help, who control such matters, becoming afraid of the stove, apprehending an explosion, would not use it, and there was an end of the matter. Having experienced the great convenience of such a stove, we were especially pleased to meet with one so constructed that even the most timid person, if but fairly intelligent, could see must be safe from anything like an explosion. It is very easy to show that *oil itself* can not explode, but that the danger comes from the *vapor* of the oil mixed with air. If a lamp is "chock full" all the time, there is no place for vapor, and there can be no danger from that source. The lamp of the "Windsor Oil Stove" is so constructed that it must be always full. There can not be, if the simple directions are followed, a thimbleful of vapor. This oil stove is provided with the needed accessories of oven, extension-top, etc., much like other oil stoves, but in its oil reservoir, or lamp, it is so unlike any other that we have seen that we give a diagram showing its structure. The engraving makes no attempt to accurate proportions, or to show anything but the parts concerned in holding the oil, which are given in section. The oil reservoir is shown at *a*, and is completely closed, except the openings for the wick tubes and the supply tubes. Above this is an open pan, *b*; from the bottom of this pan there is a tube, *c*, going nearly to the bottom of the reservoir, *a*; at *d* is the filling tube, which reaches almost to the bottom of *a*, extends up some inches, and is closed by a screw cap. The wick tubes, *e*, *e*, are quite long, passing through the pan, *b*, and sufficiently far into the reservoir, which has at *f* a glass window, to allow the hight of the oil to be seen. At *g*, *g*, are supports which hold up what we may call the the stove proper, a cylinder, not shown, upon the top of which the cooking utensils are placed; the bottom of this cylinder is formed by a sheet of perforated metal, *h*, through which the wick tubes pass. Of course there are contrivances for regulating the wicks, and other conveniences, but our business is only with the oil reservoir. Now, to fill this lamp, water is poured into the pan, *b*, until, passing through the tube *c*, it fills the reservoir *a*. When *a* is full of water, then oil is poured into it through the filling tube, *d*; of course this will rise to the top of the water in *a*; but the tube being long, sufficient pressure is exercised to drive the water out of *a*, through the tube *c*, into the pan *b*. More or less oil may be put in, as desired; the amount being seen through the window, *f*. In the diagram, water is represented by short, horizontal lines, and oil by perpendicular ones. After *a* is partly filled with oil, the wicks are put in. A glance at this diagram will show that so long as there is any water in the pan, *b*, the reservoir must be full of either water, or part oil and part water; the window shows when the oil needs replenishing. So long as there is water in the pan, there can be no space in the reservoir for vapor, and it is manifestly impossible for an explosion to take place. As we intended to describe only the seat of possible danger in such stoves, the oil reservoir, we dismiss the cooking portions by saying that they appear to be abundant and well made.

A Knife Box, is not a new thing, and in giving an engraving of one, we do it to remind those who are still without this useful article,—of its great utility. A knife box should be large enough to hold the knives and forks in every day use, and nothing more. It should be so constructed, as to not be ugly; in fact, it ought to be neat, and of a shape to take up no extra room in the pantry. The handle should be large and sensible, and the partition through the middle of the box always separate the knives from the forks; there should be a lid to each side, to keep out the dust, as in the engraving.

KNIFE BOX.

Handy and Easily Made Steps.

There are many occasions in the daily work of the housewife when a step-ladder, or perhaps better, a step-stand, is the one thing needed. There are curtains to fix; windows to wash; a high shelf to reach; pictures to hang, and a multitude of cases where a chair is not high enough, the table is unsafe, and some kind of a steps are desired. The engraving shows a step-stand, which has two important qualities, viz.: a broad place to stand upon at top, and it can be easily and cheaply made. It is a step-stand which has no means for folding up and lengthening out, is substantial and safe, and is not patented. The engraving shows how it is made. It may be of any size, but one that will pass readily through an ordinary door, and is about three feet in hight, will be of a handy size. If the legs are made of hard-wood, they need not be very large, and the braces, which serve as steps on the front side, can be nailed, but it is better to screw them, to the legs. The top should be so large that a person can stand upon it, with room for a pail. The three short braces beneath the top are not shown in the engraving, but should not be omitted in the construction. This step-stand may be made by any one who can use a saw and drive a nail. Many families who can not afford to buy a step-ladder from the stores, can build one for the few cents the lumber and nails, or screws, will cost. Aside from the household, such a step-stand will serve a good purpose in picking fruit.

A STEP STAND.

A Boiling Basket.—The utensil shown in the engraving, is to hold the vegetables to be cooked, and is set in the boiling pot. The ease with which the potatoes, etc., can be removed from the boiling water as soon as they are done, and the perfect draining which they afterwards get, make this a very convenient and useful affair. "Sogginess" in potatoes, is largely due to imperfect draining after cooking, which the Boiling Basket generally overcomes.

BOILING BASKET.

Rye Bread, by Mrs. "T. B. F.," Chicopee, Wis. Set a sponge over night as follows: One cup good yeast; six potatoes, mashed fine; one pint warm water; three cups flour; two table-spoons lard; two table-spoons brown sugar. In the morning, mix with this, one quart warm sweet milk; one table-spoon salt; one cup Indian meal, and enough rye flour to make a pliable dough. In warm weather add one tea-spoon soda dissolved. Mix it well and let it raise for two or three hours; then mould into loaves, raise, and bake in deep pans.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

In our last talk about Matter we reached a point where we can no longer use our eyes, even when aided by the most powerful microscope, for you will recollect we were

TALKING ABOUT ATOMS,

or the particles of which all matter is made up. While these *atoms* have never been seen, all that we know about matter gives evidence that they exist. Everything that we do know, then, points to the belief that matter is made up of minute globes or spheres, called atoms, with spaces between them. We can represent by the diagram, figure 1, this idea. Understand that no one has ever seen this, but in order to explain the various properties of matter, we feel very sure that this must be the real condition of all bodies. Supposing then that these atoms really exist, we have now to consider what holds them together. You know that the atoms of steel are held together more firmly than those of lead, and in the lead they are more firmly held than in wax or tallow. The atoms are bound together by a power or force called

Fig. 1.

COHESION, OR ATTRACTION OF COHESION.

You will notice that this is a very different force from one we talked of a while ago—the *Attraction of Gravitation*, or *Gravity*. That acted between one mass of matter, or body, and another, while Cohesion acts between the particles or atoms of the same body. This force, as already

hinted, varies greatly in different kinds of matter, and many of the properties of matter are due to strength with which the atoms are held together. If this force of Cohesion is so strong that the atoms are prevented from moving upon one another,

THE BODY IS A SOLID;

but when the cohesion is much less, and while the atoms are still held together, the force is so weak that they freely move about upon one another, and the body has no form of its own, but takes that of surrounding bodies,

WE HAVE A LIQUID.

There are two forces; one tending to hold the particles together, an attractive force, *cohesion*, and besides this another, which tends to separate or drive them apart, a repulsive force, or *heat*. In ice, we have a solid body, in which the atoms are held firmly together; by means of a slight amount of heat, the cohesion between the particles is weakened, and it becomes water, or liquid, and with still more heat, the attraction of the atoms is quite overcome, and we have steam, an air-like or gaseous form, in which the atoms repel or fly off from one another. The difference in the space occupied by water in these two states, is seen in the diagram, figure 2. A cubic inch of water, when turned to steam, will occupy 1,700 times the space. But some of the peculiar and important effects of heat will be given in future talks. All that we wish to show now is, that heat is opposed to cohesion, and that nearly all forms of matter may be made to appear

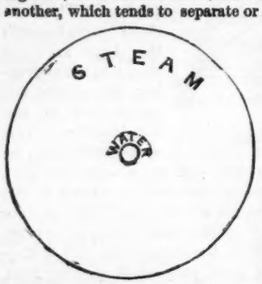


Fig. 2.—WATER AND STEAM.

AS SOLID, LIQUID, OR GAS,

by the use of that wonderful force known as heat. Cohesion is a force that acts at distances so small that we can not conceive how minute they are. If we break a piece of glass or steel, it makes no difference how firmly we may press the broken surfaces together, they will not cohere. If we take two bullets and cut away a piece from each (fig. 3), to leave a smooth bright surface, and then forcibly bring these surfaces together, with a slight twist (fig. 4), they will cohere so firmly that you will find it very difficult to pull them apart. The lead being soft, it allows us to bring some of the particles near enough together for the cohesive force to act. If the cohesion between the particles of a body is readily overcome by a blow, and it breaks readily, we say that

Fig. 3.

IT IS BRITTLE; BRITTLENESS

then is a property of matter due to the strength of cohesion; glass, ice, and sugar, are examples of brittleness. If the force of cohesion allows the body to be bent in any direction without breaking—of which we have good illustrations in lead or India-rubber, we say that

IT HAS FLEXIBILITY,

which is another property of matter. If a substance can be beaten into another shape without breaking, as can be done with iron, gold, or still easier, lead, it is

SAID TO BE MALLEABLE,

a long word that comes from *Malleus*, the Latin for hammer. If by pulling at a substance, as in working candy, we can draw it out without breaking, we say that it is *ductile*. Wires are made from iron, copper, or other metals, by drawing them through holes in a steel plate; these holes are smaller and smaller, so that starting with a piece of iron the size and length of a lead-pencil, and drawing it each time through a smaller hole, the iron will appear as a wire as fine as a thread, and several hundred feet in length. The cohesion between the particles being weak enough to allow this change of form to take place, and yet strong enough to prevent breaking. All these properties—Flexibility, Malleability, Ductility, and Tenacity—are due to degrees of the force of cohesion,

Fig. 4.

and are only found in substances that are comparatively soft. Hardness is the opposite of softness, and we find that hard substances are brittle. Many bodies, when bent or pressed out of their usual shape, recover their form when left to themselves. This property

IS CALLED ELASTICITY,

and is the opposite of brittleness. A ball of ivory or glass when it falls upon a hard surface is thrown out of shape by the blow, but it at once recovers its shape, and in doing this rebounds; a piece of steel or of whalebone are other examples of elasticity. The ability to change the strength of cohesion between the particles of a metal, and make it hard or soft, is of the greatest importance. We do this, by the aid of heat, in the operations

OF ANNEALING AND TEMPERING.

If a piece of steel be heated red-hot, and then suddenly plunged into water, it will be very hard and brittle. If it be heated in the same manner and allowed to cool slowly, it will be soft and flexible, and have the other properties that accompany softness. A skillful worker in metals will, by a proper management of the heating and cooling, bring steel and other metals to the hardness or softness, required for various uses....The terms

COHESION AND ADHESION

do not mean exactly the same; *Cohesion* is the force that holds together particles of matter of the same kind. *Adhesion* is the force that holds particles of a different kind together. We can not make two pieces of wood or two bits of paper cohere; but if we put a thin film of glue between the pieces of wood, that adheres to each and holds both together. So we use mucilage or paste to make two pieces of paper adhere. Quicksilver will not adhere to the smooth surface of a plate, but the drops will roll about; while drops of water or of oil will adhere to the plate or *wet* it at once. The adhesion between a liquid and a solid—or between some liquids and some solids—is shown by placing a small glass tube in water, or other liquid that will adhere to, or wet the glass. If the tube, *a*, figure 5, is one-twelfth of an inch in diameter, and is placed in water, the liquid will rise in it a quarter of an inch; if the tube, *b*, has a bore only half that of *a*, the water will rise twice as high, or half an inch, and so on, the smaller the tube, the higher the liquid will rise. This adhesion between the liquid and the inner surface of the tube above illustrated is called

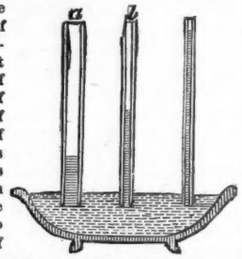


Fig. 5.—CAPILLARY TUBES.

CAPILLARY ATTRACTION.

The word *capillary* comes from the Latin *capillus*, a hair, as it is the strongest in very minute or *hair-like* tubes. It is a real force, able to overcome the attraction of gravitation, and raise the liquid a considerable distance above the surface of that in the dish. Because this was first noticed in small tubes, it keeps the name "capillary attraction," but it is exercised by flat surfaces,

Fig. 6.—CAPILLARY PLATES.

and, but for the difficulty of changing names "surface attraction" would better describe it. You can try a

VERY PRETTY EXPERIMENT,

showing at once the force of capillary attraction, and the fact that it takes place with flat surfaces, by means of two pieces of window glass. Take two pieces of clean glass of the same size, and place them as shown in figure 6. They should quite touch at two edges, as seen at the left hand, and be a little apart at the other edges. By placing a small bit of stick to keep two edges open, and binding the pieces of glass together with a coarse thread or small twine, you will be able to keep them in place. In order to see the liquid plainly, it should be colored by adding a little ink. The glasses being set in a plate or other dish containing the colored water, the liquid will at once rise, as shown in the engraving, rising the highest where the surfaces are the nearest together, and lower where they are farther apart, and forming a beautiful curve. Capillary attraction is shown whenever a porous body is placed in a liquid that will wet it; thus if a lump of sugar placed in a spoon has its lower part merely touched to your coffee or tea, those liquids will rise at once, by capillary attraction, and wet the whole lump. We make

A FREQUENT USE OF THIS FORCE,

and though a small affair, its application has much to do with our daily—or rather nightly—comfort. In our lamps the oil is burned at a point, often some inches, above the part of the lamp that holds it; it is brought up to the place where it is burned, by the wick, and by capillary attraction. The cotton flores of the wick present a great number of surfaces very close together, and the oil rises between these, just as it does through fine glass tubes, or between the plates of glass. But there are still other important applications of Capillary Attraction, which I must leave until another time.

The Doctor's Correspondence.

"WHO IS UNCLE HAL?"

do you ask. He is of course "Uncle Hal," and we call him so, because he is an uncle, and his name is Hal. Though he has nephews and nieces, he is not an old fellow like myself—in fact, he is rather a young uncle, and not so very many years have passed since he was a farmer's boy, that he has forgotten how farmers' boys feel and act. In fact he is, as you will find out, up to all the ways of a boy's country life, and while I would not have you by any means forget the "Old Doctor," I want you to take kindly to the "Young Doctor," for he is a doctor as well as an uncle, and I am sure he will prove an excellent uncle to our many Boys and Girls.

THE SIZE OF CITIES.

"T. Z. S." writes from Conn. that she and another have a dispute as to the relative size of London (Eng.) and Yedo, or Jeddo (Japan), and that they have decided to leave the matter to me. I have a poor memory for figures, but in this case I can appeal to the authorities. The latest edition of Chamber's Encyclopædia (1877) says that the population of London was at the last census (1871) 3,251,804. As to the population of Yedo or Jeddo—it being written both ways—we have no census but only estimates. Its population has been stated at all the way from 1,500,000, to 3,000,000, and some writers think that even the lowest of these figures is too high. The probabilities are that London is much the largest, but here are the statements from the best source that I have at hand, and my young friends must "decide" for themselves.

CITIES ARE NOT SO LARGE

as a general thing as people suppose. I came across not long ago a carefully prepared article on population, in which it was stated that there were in the whole world only 215 cities with over 100,000 inhabitants; 29 with a half a million or more, and only nine containing over a million, and of these nine, four are in China. In the order of their population they stand: London, Paris, New York (including Brooklyn), Vienna, Berlin, Canton, and three other Chinese cities.

A STEAM WHISTLE PUTS OUT A FLAME.

A correspondent in Ohio writes that he has upon the boiler in his factory a steam whistle, and that this, when blown, will put out the lamp in a lantern placed 20 or 30 feet away from it. He writes to "The Doctor" to ask the reason why. If "H. L. L.," could *see* the air when the whistle was blowing, he would observe that it was thrown into waves, much as the surface of water is disturbed when a stone is dropped into it. But while the waves in the water move horizontally only, those in the air move in every direction. This disturbance of the air may be sufficient to put out the lamp, just as a very slight puff across the top of a lamp chimney will extinguish the flame. But there may be another cause. The lantern is surrounded by glass; that glass if struck will vibrate, and give off a sound; if the note of the whistle has the same pitch as that of the glass, the glass will vibrate when the whistle is sounded, and its vibration so disturb the air within the lantern as to put out the flame. To find out if this is the cause, try other lanterns under like conditions.

Our Puzzle-Box.

NUMERICAL ENIGMAS.

1. I am composed of 19 letters:
   My 8, 9, 14, is a young animal.
   My 1, 6, 3, 4, is part of a house.
   My 7, 2, 11, 12, is a distance.
   My 13, 17, 16, is often a disagreeable answer.
   My 10, 5, 17, 15, is much to be dreaded.
   My 18, 12, 1, 19, is a reptile.
   My whole is the name of a celebrated poet. EMMA.

2. I am composed of 9 letters:
   My 6, 8, 7, 2, is a girl's name.
   My 5, 4, 1, 9, is the name of a college.
   My 7, 9, 4, is a kind of drink.
   My 6, 9, 1, is a fish.
   My 3, 6, 1, 7, is a thick fabric.
   My whole is the name of a well-known General.
   J. C. H.

PUZZLE WITHIN A PUZZLE.

Nhew ym dirht snaphep ot eb ym nodecs eh yam veah ym strif papdile ot mih; ym lowhe si a drib. HAUTBOY.

DIAMOND PUZZLE.

1. Part of a bowl. 2. A color. 3. Convenient. 4. To diminish. 5. A city. 6. Fractured and torn. 7. Heathen gods. 8. A number. 9. Part of a room.
The central letters, read across and downward, form a city. NIP.

CHARADE.

My first is a verb,
My second not jolly,
My whole is a poem—
One censuring folly.
WILKS.

ACROSTIC.

1. One of the books of the Bible.
2. One of the circles of the globe.
3. One of the United States.
4. A country of Europe.
5. A continent of the eastern hemisphere.
6. A far northern country.
7. A city of the United States.
8. A kingdom of Europe.
9. A French word, meaning a jewel.
10. A large river of North America.
11. The capital of a Western State.
12. A town in Indiana.
13. A river on the border of the United States.

The initials form the name of a well-known Statesman.

O. L. RICE.

SYNCOPATIONS.

(Omit one letter from the original word—*e. g.*, syncopate a scow, and leave an animal. *Answer*—boat, bat.)

1. Syncopate a bird and leave a domestic animal.
2. Syncopate a vehicle and leave another domestic animal.
3. Syncopate an article of food and leave an ornament.
4. Syncopate another article of food and leave a household article.
5. Syncopate a measurer of time and leave a fowl.
6. Syncopate distress and leave a household utensil.
7. Syncopate a garment and leave a dwelling.
8. Syncopate a burden and leave a boy.
9. Syncopate a coin and leave a stamp.

ISOLA.

TRANSPOSITIONS.

(Fill the blanks in each sentence with the same word transposed—*e. g.*, Be——and——to the music. Fill the first blank with "silent," and transpose it to "listen," for the second blank.)

1. I always made him a——of my——.
2. Are you at the—— ——still?
3. That——will——our dresses.
4. I noticed her——as she——by.
5. We heard the——plainly as we crossed the——.

T. AYLOR.

AN ENIGMATICAL TEA-TABLE.

1. A man mentioned in the Bible.
2. What ladies dresses are sometimes made of, with the first letter changed.
3. A letter of the alphabet.
4. A mother and two boys.
5. Part of a wagon.
6. What invalids often have, and what they give the doctor.
7. What you often do for amusement, with a primary letter added.
8. An abbreviation of one of the United States, and some young ladies.
9. A tool and some wise men.
10. Two-thirds of what the sun sheds, and an important part of the tea-service.

CONCEALED TREES.

1. Johnnie, you are splashing that water around, terribly!
2. It is rather overwhelming, I must confess.
3. I thought I was doing it up in elegant style.
4. If I grow too demonstrative you must chide me.
5. It was the most popular church in the country.
6. The pastor is now ill in Denmark.
7. You will find Sam a pleasant companion.

PI.

A roalpup tewrir, askpegin fo het canoe lagphrete, redsnow therhew het snew own metitstrand hurthog het tals treaw liwl eb shref.

ANSWERS TO PUZZLES IN THE JUNE NUMBER.

DROP-LETTER PUZZLE.—1. Myrmidon. 2. Judicature. 3. Haversack. 4. Serpentine. 5. Treacherous. 6. Frankincense.

PI.—Glycerine is a substance contained in the fat of animals, and also in some vegetable substances, from which it is separated by chemical processes.

NUMERICAL ENIGMAS.—1. Infelice. By Miss Augusta J. Evans. 2. Grieving for misfortunes is adding gall to wormwood.

ANAGRAMS.—1. Wearisome. 2. Disobedience. 3. Ejaculates. 4. Escapade. 5. Imprisonment. 6. Greediness. 7. Particular. 8. Chrysalis. 9. Indomitable. 10. Malevolent.

A METAGRAM PUZZLE.—The central word is "Prospect," from which may be made the various things illustrated around it—post, store, rose, top, props, rope, cot, and pot.

METAGRAM.—Town: from which may be made the words—on, to, ton, two, won, no, not, own, tow, wot, now.

SCATTERED SQUARE.

F A R E
A R E A
R E A R
E A R S

CROSS-WORDS.—1. New York. 2. Machpelah.

EASY RHYMES.—Lad, clad, bad, dad, mad, sad, glad, brad, gad.

CHARADE.—Dogma.

Puzzles, answers, and such matters as were formerly directed to "Aunt Sue," may hereafter be sent to "The Doctor," No. 245 Broadway, New York.

How to Collect Butterflies.

We have already had something about preserving butterflies, and now **Mr. E. J. Smith**, of Natick, Mass., sends his methods, which will be useful to those who wish to make specimens of the destructive or harmless species. He writes as follows: "To capture butterflies, I use a net made thus: take an iron or brass wire about $^3/_{16}$th inch in diameter, and bend it into a circle about one foot in diameter, and twist the ends together to form a handle about four inches long; this is to be inserted in a hole bored in the end of a stick, which should be from 4 to 6 ft. long. The net is of mosquito-netting, or muslin, about 2 ft. deep, and tapered to about 6 inches in diameter at the bottom. In capturing, the net is thrown over the insect, and by a turn of the wrist the bottom of the net is thrown across the mouth, thus closing it. Wait until the insect stops fluttering—which a butterfly will soon do,—resting with the wings closed over the back; grasp the insect under the wings, and pinch firmly, this paralyzes it so that it cannot fly, after which it may be taken in the hand and boxed. To kill insects I take a glass jar with screw top, and place in the bottom a lump of Cyanide of Potassium, as large as a filbert, pack a lot of paper over it to keep it in place, put in the

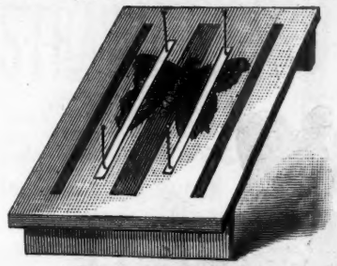


Fig. 1.—SETTING BOARD.

insects, and leave them from 15 to 30 minutes or more. [The Cyanide is used by photographers and others, and is sold by druggists in fragments looking somewhat like white marble. It is a most deadly poison, and should be used with a full knowledge of its dangerous qualities. When placed at the bottom of a jar and covered with paper, it will give off a deadly gas, and kill the insects placed within its reach. ED.] Chloroform and Ether are nuisances, and should not be used, as insects killed with either of these are so rigid that it is almost impossible to set them. I enclose rough sketches of my way of setting. I make my boards as follows: Take a pine board about one foot square, and ½ inch think, cut grooves through it as shown in fig. 1. A strip of wood the length of the width of the board, and 1½ inch wide, is nailed edgewise, across the grain of the board, and about half an inch from the edge, to form legs, and also to prevent the board from warping. A sectional side view of one of these setting boards is shown in fig. 2. On the underside, over the grooves tack strips of cork to receive the pins which should be stuck down through the cork so that about ½ of an inch of the pin projects above the insect. Having pinned the insect in the groove, spread the wings by means of "setting needles," (which are common stout needles forced eye foremost into slender pine handles), and place strips of cardboard or other smooth paper over the wings, and confine by pins as shown in the engraving, giving the wings the proper position with the setting needles. On large specimens another, and wider, strip should be placed over the wings to keep them from curling in drying. *All* specimens should remain on the boards at least a week, and large ones from 2 to 4 weeks or even more. If removed too soon, the wings will sag, or warp. Young collectors should especially bear in mind NEVER to touch a butterfly's wings with the fingers, but in handling always take them by the thorax, under the wings. I think the use of threads over the wings, as mentioned by your correspondent, would be likely to rub or deface the insect, besides they would not hold so smoothly as paper. Pins should never be stuck through the wings, as they deface the specimen. I keep my set-

Fig. 2.—SETTING BOARD, SIDE VIEW.

No. 469. Illustrated Rebus.—An old saying, or at least a part of one, that we often hear.

ting boards in a "drying case," (fig. 3), which is a case with a frame door covered with wire gauze to exclude insects, and admit air. The boards are placed one above another, like shelves, strips of wood being nailed to the sides of the case to support them, as shown in the engraving. After insects are dry, they should be placed in air-tight boxes with glass covers, and a small piece of a sponge kept wet with creosote should be placed in each box to keep out destructive insects, which would otherwise injure them. Camphor should not be used for this purpose, as it is injurious to the specimens. A case of shallow drawers, about two inches deep, and made to take 12×16 inch glass, is very good, to keep insects in. Butterflies should be kept in the dark, as light injures them. Butterflies intended for exchange with other collectors should not be set, but dried with closed wings, and placed in small paper envelopes. They may be set at any time by placing the envelopes in a dish of damp sand, covered air tight, and allowed to remain for two or three days. Insect-pins may be purchased of taxidermists and others for about $1.25 per thousand, and are vastly better than common pins for all insects.

N. B. CAUTION.—All our talk about catching and preserving butterflies and other insects has heretofore appeared in the Boys and Girls' Columns, for the reason that the questions concerning them have come from the older boys and girls. Some do not like the idea of encouraging children to take life. But it must be remember-

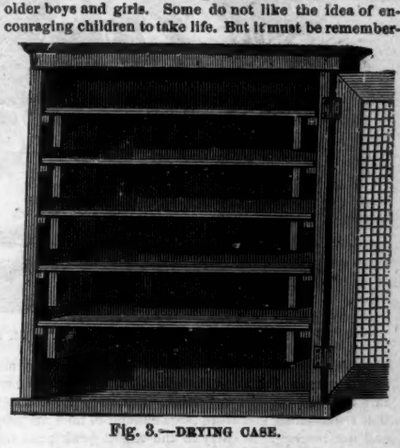


Fig. 3.—DRYING CASE.

ed that the most beautiful butterflies and moths are, in their caterpillar state, exceedingly destructive to plants; besides this, they naturally live but a few days, and then die a lingering death with broken and torn wings, and if we can give them a sudden and painless death, there is no cruelty exercised. But our trouble with this article is, that it advises the use of *Cyanide of Potassium*, which is a *very dangerous poison*. If a lump of it be placed in the bottom of a jar or wide-mouthed bottle, and *kept there*, well covered with paper pressed down over it, no harm can come of it. The vapor it gives off kills the insects. The article should not be handled, or removed in any manner, but kept for this purpose alone with the full knowledge that it is poisonous. So we say to every boy and girl disposed to try it, show this article to your parents, and if they approve, all right. If they say "No"—let that settle it. But first be sure and ask your parents.

The Trapper Caught.

Last month I gave you some of my experience in trapping woodchucks, which resulted, as you may recollect, in an outgo of some of the traps with which the woodchucks had nothing to do. Not to be discouraged by anything so trivial as a failure, I turned my attention the next season towards another race of animals which abounded in our neighborhood, and, like the woodchuck, was also a nuisance, though not so great a one as the woodchuck, and withal a wild *beast* of more gentle habits, less knowing in those things which oppose the success of the youthful hunter, and therefore the easier to be led into a trap. These tender creatures—of course, I am talking about *hares*, but as every one in the country calls them rabbits, I shall be obliged, in order to be understood, to say "rabbits" too—but, nevertheless, they are hares.—Well, these animals, which as far as their ears go (and they go a good ways sometimes), are rivals of a much larger and *sterner* animal, often used as a beast of burden and more noted for the lightness and activity of its hind legs, upon the least provocation, than for the highest type of wisdom. Some people, who are more *otherwise* than *wise*, claim that there is a jealousy between rabbits and mules, but this I do not believe, because all this about the subject of *ears* is pure and simple *hearsay*. However gentle and timid the rabbit may be, they have teeth and know how to use them, especially upon young trees. The orchards had been badly injured the winter before, and this trouble must be stopped. The word had

"I'LL HAVE HIM."

gone forth, catch them, in early winter when they are fat—if you can, but catch them at any time. For the capture of these enemies I brought into use all the boxes that I could find, that were large enough to hold my prey and not too large to carry to the rabbit bank near the orchard. Saleratus and soap boxes were the first choice. I then prepared a number of "figure fours," which I will take it for granted you have both seen, and know how to make and set. If you don't know, ask your big brother, and if he doesn't know—well! he ought to.

I was not the only boy in our neighborhood that had made up his mind to go into the rabbit business—such things are *catching*. Harry Culver, our next neighbor's boy, had prepared for trapping in much the same way as myself, and located his traps (as our orchards joined, with only a fence between) but a short distance from the place where mine were set. Young Culver did not inherit the best disposition in the world, and in the opinion of some was said to have a bad eye. I visited my traps every morning regularly, with no success. The

Fig. 1.—"BEAUTY."

rabbits had evidently been about, as I could see their tracks. Harry would frequently have game for his trouble, as he would boastingly tell me when I would meet him on the way to town—but not a hair (hare) for me. Things did not look just right, and, if I must confess it, I began to grow suspicious. Harry always visited his traps the first thing in the morning, while I was driving in the cows, and doing the other chores, leaving the private enterprise until after breakfast, and while I was taking the cows to the back pasture. I had often been told that "the early bird catches the worm," and I began to think the early boy's trap catches the rabbit, so I concluded to make an early call upon my soap boxes and "figure-fours," and if not "healthier and wealthier," I might be, perhaps, "wiser" than in the past. That I did not herald my coming with shouts may be presumed. Proceeding quietly and cautiously, and taking advantage of every clump of bushes or other shelter, I approached and made a brief survey of the field. I was *certain* that young Culver was ahead of me, that he was kneeling before one of my traps, and was in the very act of removing a real live rabbit! You may imagine how I felt. He was a much larger boy than I, and to rush upon him would be only throwing myself into his hands for a sound thrashing. I felt in my pockets, as every boy will in cases of emergency, and found there, among a multitude of weighty and important things, a small but very stout cord which had been used in tying up a calf. I could see that Master Harry was entirely absorbed in his business, and besides his legs were astride a young tree, and free from the ground, as he was resting on his knees and tip-toes. "I'll have him," I said to myself, and quietly made the most of the precious moments. The artist has given you perhaps the most absorbing scene in this drama of "Catching and Getting Caught"—but as it was not taken by a photographer on the spot, there are certain minor points that are not as life-like as they might have been. For example, justice is not done to Culver's nose; it was even sharper than represented. Whatever I say of that boy, I must give him credit for being sharp—some called him a sharper. Well! you may ask what did I do with the young thief. Nothing rash, I assure you. There was too much of a joke to it for Harry to get mad, and as for my part, I had no great desire to punish the poor fellow farther. He not only acknowledged that he was caught, and according to the trappers' laws, was at my disposal; but before releasing him I put several questions to the culprit, which bore upon my previous poor success in securing rabbits, which resulted in his telling me that two-thirds of all the rabbit skins he had belonged by right of capture to me. If I would say nothing about his dishonesty and detection he would bring me my proper share of the month's returns. To this I consented, provided he would just return with the skins, the steel traps which I lost the year before. The whole matter was arranged in a manner satisfactory to me. I gained a warm and trusty friend instead of making an enemy, and until this day no other person has known the experience of that early morning call—not even the folks at home, who wondered why I was gone so long—except those who were the chief and the only actors in a drama which might be entitled "How the Trapper was Caught at his Own Game." But it was not at his own *game* altogether; it was my rabbit, and I took it home as my first "catch." I give this story to the boys and girls of the *American Agriculturist* only with the consent of Mr. Harry Culver, who is now a wholesale hide dealer near—UNCLE HAL.

Hats for our Horses.

Probably every, or nearly every, one of you boys and girls, who live upon the farm, has seen a hat upon a horse. Perhaps you who read this have put your own hat upon old Dobbin's head, just for the fun of seeing how queer the old horse would look; or it may be that your sister has placed her bonnet on the head of a favorite colt, and witnessed a comical sight, and, at last, perhaps, the colt wishing to have his share of the fun, her charming and much prized bonnet has been the worse for the trial. In the accompanying engravings we show the heads of two city horses provided with hats; these are very different in every way, but appropriate to their respective wearers. What a fine head the first one is, we only wish we could have given space to show the whole animal. How pleasantness and pride mingle in every part of the face and neck! How well the light airy hat becomes its wearer. If you were used to city ways you would know that this horse is one of the sleek, well kept and well groomed animals belonging either to one of the express companies, or to the dray-man of some large business house, as it is among these—aside from the carriage horses of the wealthy—that we find the best cared for animals. The driver is proud of his horses, and decorates them in various ways, while the horses appear to enjoy it, and proudly look down upon the poor drudges engaged in common work.

In the second picture we see a good old worker, who has seen many days of hard service—a horse to be honored for the work he has done; if we cannot admire him for a smooth coat, agile limbs, and a display of high life and style, which his counterpart possesses. His hat becomes him also, and he probably thinks as much of it as if it was made of the gayest colors, and in the latest fashion. Suppose that, in imagination, you just change the hats, and slip the old weather-beaten straw hat on "Beauty's" head, and fasten the elaborate red, white, and blue head-gear over "Old John's" ears, and see how you like the change. There is a "fitness of things" even in hats for horses, and we think our artist made very good selections from the thousands of forms to be seen every day in the large city of New York. Old John may be seen every day at the markets, and is not the only cart-horse that is provided with a hat. Beauty is one of the many gay horses which look so proud and step so high as they dash along on Broadway with the gaily painted and gilded express wagons and grocers' vehicles.

We have a purpose in giving these illustrations to our family of boys and girls. You know how much more comfortable it is to have a good broad-brimmed hat on your own head, on a hot sunny day in August, than it is to stand bare-headed in the burning sun. Horses are creatures of feeling, much like ourselves, and deserve anything which will add to their comfort while doing our hard work. It is a very humane act to provide horses with some sort of a sun-shade for their heads, and every boy or girl old enough to know the blessings of shade in summer, should see to it that neither "Fred," "Fan," "Charley," nor other horse of theirs goes to work in the hot, shadeless field without some sort of a hat to wear. It is now known that many of the troubles of horses

Fig. 2.—"OLD JOHN."

come from the beating of the hot sun directly upon their heads, and some go so far as to provide, besides the shade, a wet sponge upon the head to keep it cool. But a simple shade will answer; a piece of strong paper will serve as long as it lasts, but it is better to make a more durable one of cotton cloth. The girls may make them as fanciful and elaborate as they please, but provide something; the horse deserves it; and all hands will profit by this thoughtful consideration of the comforts and health of the most useful and appreciative of animals.

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Mayor Daniel F. Beatty of Washington, N. J., the famous piano and organ manufacturer's annual midsummer holiday offer is by far the best offer of its kind ever before put out by this well-known, successful business man.

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Style 1686. Height, 73 in.; Depth, 24 in.; Length, 60 in. Three (3) Sets Reeds. Thirteen (13) Stops. Five (5) Octaves. French Veneered Paneled Cases highly finished, and a beautiful, neat design. Beatty's Improved Knee Swell, and Beatty's new Excelsior Grand Organ Knee Swell. The mechanism, design, and music in this Organ renders it the most desirable ever before manufactured for the parlor or drawing-room. Retail price asked for such an Instrument by the Monopolists' Agents, about $370.00.

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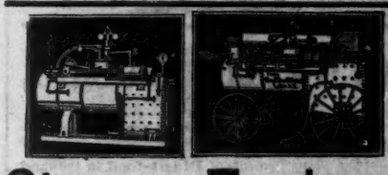

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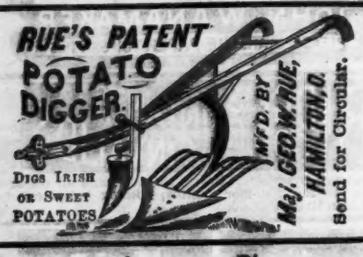

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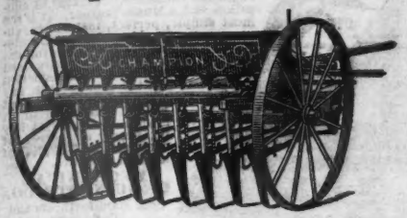

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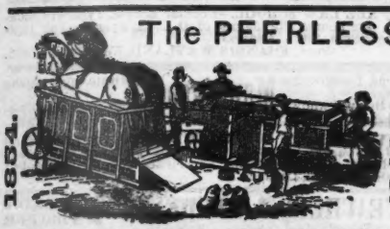
1854.  1879.

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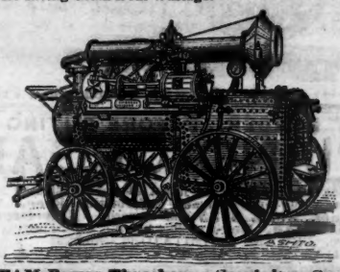

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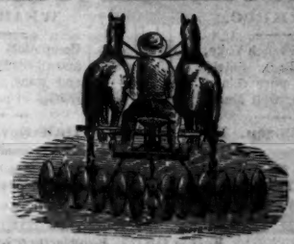

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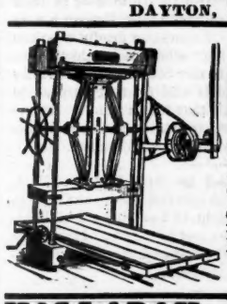

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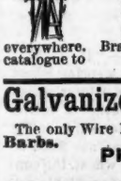

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 294.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

"The Vanilla Tree."—England has of late been much excited, over a letter to "The Times," in which the writer praises the "Vanilla Tree," as planted in the avenues of Paris. Some one guessed that the tree must be the Catalpa, from some resemblance in the shape of its pods to Vanilla beans, but the "Vanilla Tree" of this Times correspondent, turns out to be the *Paulownia*, which has nothing in common with Vanilla.

The "Moss Pink."—One or our best, native, early-flowering plants, *Phlox subulata*, has rewarded an English gardener, Mr. Nelson, who has raised it from seed, a number of varieties as to color. "The Garden" says, "It would be interesting to know if there are many varieties where the plant is common in America; if not, our American friends will have to come to us for these." Of course we do not know the extent of the variation obtained by Mr. Nelson, but we have this charming plant, in the purest white, deepest rose color, with numerous intermediate shades, and all excellent.

Steam in Lumbering.—According to the "Pacific Rural Press," an English machine, called "Ransome's Patent Steam Tree-feller and Log Cross-cut Saw," has been introduced upon the Pacific Coast. Our esteemed contemporary, while it reproduces an English engraving, showing the method of its operation, does not state that it has yet been tested upon the trees of California, where such a machine, if practicable, would be especially useful. It operates upon much the same principle that drills are worked in mines in so far as the power generated at a distance is conveyed to a separate machine stationed where the work is to be done. A large saw is used in felling; this is attached to a small portable engine, to which steam is conveyed from a distant portable boiler through a flexible pipe. The forests of California are well calculated to test the value of such a device, and we doubt not that the "Rural Press" will in due time give an account of its working.

"Root" of Grass.—J. W. Campbell, Ridgeway, N. C. The "root" sent by mail, more properly a *root-stock*, or *rhizome*, was very dry and dead when it came to hand. We think it was probably the root-stock of Guinea-grass, *Sorghum halepense*, but not feeling sure we wrote, asking for a specimen to be sent so packed that it would reach us alive, that we might grow the grass and learn exactly what it is. The letter, dated May 24th, was sent to the above address; on June 27th it came back "to writer," the person addressed not being found.

Noel Humphreys, an artist whose work is familiar to readers of English illustrated books, died in London on June 10th, at the age of 72. He was connected with horticulture through his numerous drawings of plants, which he executed with unsurpassed grace.

The Nettle as a Fibre Plant.—The common Stinging Nettle, was known to the ancient Egyptians as a fibre-producing plant, and is utilized as such at present in several countries of Northern Europe. Of late the plant has been investigated by a Commission appointed by the German Minister of Agriculture—and its report is noticed by the European journals. The experiments with the plant show that the Nettle produces a fibre quite equal to any other for textile purposes, yarns, ropes, paper making, etc. It is stated that a paper mill has been established in East Prussia for making paper entirely from the Nettle. It is expected that this report will lead to the cultivation of the Nettle on a large scale, and that extensive tracts have already been marked out for this purpose. The plant in question is the common Stinging Nettle of Europe, *Ur-*

tica dioica, which is naturalized in this country, especially in the older States, where it is found along road sides and in waste places—a plant which the old herbalist, Culpepper, said could be "found by feeling in the darkest night." In the wild state it is only two or three ft. high, but in rich soil it will reach 6 to 10 feet. It is a perennial, and a plantation, with manuring every two years, is said to be productive for 12 to 15 years....It should not be forgotten that, at the time of the Ramie excitement, our friend, Sam'l Miller, then of Bluffton, Mo., suggested that our native Wood-Nettle (formerly *Urtica Canadensis*, but now) *Laportea Canadensis*, would yield quite as good a fibre as Ramie, and he sent seeds to all who wished to try it. Had not Mr. Miller, after his nature, been free-handed with the seeds, but charged $1 for 10 seeds, we should probably have heard of the results.

The Death of Doct. Moore.—Death has been busy among European horticulturists during the present year, and now the name of Doctor David Moore, the well known Curator of the Botanic Garden of the Royal Dublin Society at Glasnevin, is added to the already long list. Doct. Moore is mentioned as a model Curator, and his name has long been prominently connected with important botanical and horticultural work. He introduced many new plants, and has of late been noted for his success in hybridizing the Sarracenias—our native Pitcher Plants, which, in his hands, gave interesting results. The "Gardeners' Chronicle," in its issue for June 14th, gives a likeness of Doct. Moore, which is a model of excellence in the way of a portrait upon wood.

Catfish Spawn.—A subscriber inquires for the spawn of Catfish, evidently supposing it can be transported for stocking new waters in that condition. We are not aware that the spawn of Catfish has ever been taken by pisciculturists. Their attention has been directed, very properly, mainly to the propogation of fish of the best quality, and of greatest commercial importance—the various members of the Salmon family and the Shad. The Catfish is of inferior quality, and hardly worth cultivating where anything better is within reach. The *Grystes nigricans*, the Northern Black Bass, and the *Grystes salmoides*, or Southern Black Bass, are much better fish, and the latter flourish in many of the Southern and Western rivers, where Catfish are found. It is not difficult to transport them alive for several hundred miles, and it is by this method that new waters are generally stocked. They are both game fish, and it will pay to plant both of these species in suitable waters.

Squash Jam.—It is very amusing to find the English horticultural journals discussing the question of jam from the Vegetable Marrow, which is, in England, a poor substitute for our squashes. One writer says, that for the production of jam, "the Vegetable Marrow stands unrivalled....The white-fleshed marrow, naturally produces the palest jam, but the flesh of the darker kinds, especially that of the Ohio squash, [whatever that may be], not only produces the richest color in the preserve, but also the best flavor." The same writer adds, "much depends upon the making."—A remark that applies equally to stone soup. We have known preserves to be made from tomatoes and sugar, and have even seen people eat them, as if they liked them—but squash jam!

"American Jute."—"V. C. R.," Mendon, Ill., writes that the article in the July number on "American Jute," is "interesting, and queer reading for this part of the country." He states that the plant, *Abutilon Avicennæ*, Indian Mallow, or Velvet Leaf, is one of the worst weeds in this part of the State, and that it frequently grows 10 feet or more in hight. That when a field is once seeded with it, there is scarcely a possibility of killing it out, some thinking that the seed will remain in the ground 10 or 15 years, and germinate when the land is broken up again. We suppose that the "queerness" of the article, is in the idea, that a plant, such a pest with him, should be elsewhere encouraged. As the fibre is in perfection before the seed is formed, the fact that it may be a troublesome weed, will not stand in the way of its cultivation, should it be found profitable.

The "Tribune" and the Ailanthus.—The New York Daily "Tribune," in common with other city papers, has had its annual denunciation of the *Ailanthus* as a street tree. It sets forth in language strong and truthful the fact that the most unpleasant odor of the flowers quite unfits it to be planted near dwellings. It says "everybody knows it as a street tree, where it is a nuisance unmitigated save by the single fact that it does not harbor worms or insects, because no self-respecting worm can be induced to approach it." The truth of this assertion rests upon the self-respecting character of the insect, or "worm." We never knew entomologists, who are supposed to know insects morally as well as structurally, to charge *Saturnia Cynthia* with any want of "self-respect," yet that has such a decided preference for the Ailanthus leaves over all other food that it has received for this reason, the popular name of "Ailanthus Silk-worm." This insect, by the way, has become quite naturalized in parts of Brooklyn, and in some streets the trees are, or were a few years ago, a greater nuisance on account of the "worms" they harbored than for their odor. Besides, other insects *do* feed upon the Ailanthus. It is one of the curious facts concerning the daily paper, that it can not write about plants without making some ridiculous blunder. The "Tribune" is not alone in this respect, but its comicalities in this line are all the more conspicuous for the reason that it asserts itself as a farmer's paper.

Pocket Gophers.—Our notes on Gophers last month, have called out the experience of several, who have successfully destroyed them. The use of Strychnine, which we have mentioned many times during the past 15 years, still seems to be the chief reliance. The method of administering it, as given by "J. O. M.," Sauk Centre, Minn., will serve as a sample of several notes of the same purport. He says: "Take a small potato, and insert a grain of the poison in each end, place it in their underground path, leaving a small opening, to let in the light. The Gopher will come to fill up the hole, and stop the light, find the potato, and that ends him.....For ground squirrels, I soak corn, open the "chit" with the point of a small knife-blade, insert a grain of Strychnine in each kernel, and scatter the corn in the front door of their habitations. By 'grain,' of Strychnine, I mean a very small quantity indeed." Of course so deadly a poison as Strychnine, should be kept where no accident may happen from carlessness. In new countries it is so freely used, to poison wolves, and is sold for that purpose, in the smallest country stores, that it is a wonder that no more accidents occur. Perhaps its most intense bitterness is a safe-guard against this dreadful poison.

Carrying the Head to One Side.—"H. J. R.," Rockland Co., N. Y. A colt that carries the head to one side may be trained aright by fastening a thin, light, stiff hickory rod to the collar and to the ring of the bridle when driving. A check-rein fastened tightly on the opposite side would prevent the habit.

Fruit as Food.—The liberal use of the various fruits as food is conducive to good health. Fruit is not a solid and lasting aliment like beef and bread, as it is composed largely of water, and contains very little nitrogen. It does not give strength, to any great extent, and can not be used for a very long time alone. But fruits contain those acids which both refresh, and give tone to the system during the season when it is most needed; are agreeable to the palate, and valuable in their cooling and health-giving effects. During warm weather eat a plenty of fruit, provided, of course, that it is always thoroughly ripe and as freshly gathered as is possible.

Horse Gnawing a Manger.—"H. G. B." writes that he completely cured a horse of the habit of gnawing the manger and halter straps by saturating the woodwork and straps with kerosene oil. One thorough application produced a permanent cure.

Insuring a Good Crop.—"T. B. P.," Goldsboro, N. C. If we, or any other persons, could "give a plan that would insure good crops on poor, hard land," it would leave nothing to be desired in the way of accumulating a fortune. But the method has not yet been discovered, and is hardly likely to be at present. Perhaps the best plan under the circumstances would be to plow and harrow thoroughly, to get the soil in good tilth, and kill all the weeds possible, and sow the crop with what fertilizer can be afforded. If one can not get all that he wishes for, he must be content with the best he can get.

Holding for Higher Prices.—"H. M.," Halstead, Kans. It will be found that to sell one's products of whatever kind, so soon as they are ready for market, is the best in the long run. To hold for higher prices is to speculate; and in the majority of cases, to speculate is to lose. If the price is not satisfactory, one may hold his property, but as soon as products are ready for sale, and they are not sold, losses of various kinds begin to occur, and wool is subject to damage and loss as well as grain. If stored in a very dry time, it loses weight and depreciates in quality, and this should be considered. There does not seem to be any prospect of an excited recovery of business; after so long a depression, things will probably move slowly, and the slower the surer, perhaps.

Spring Wheat in Indiana.—"D. L. E.," Shelby Co., Ind. Shelby Co., Ind., is not a spring wheat section. In 1870, about 700,000 bushels of winter wheat were grown in that country, and not a bushel of spring wheat. It is not safe or wise to act in opposition to the general practice of any locality. Customs are fixed as the results of experience, and in growing wheat, the conditions of the climate fix the boundaries of profitable culture of the two varieties, spring and winter wheat. Spring wheat needs a cool season; winter wheat needs a moderate winter, and will stand hot spring weather which would destroy spring wheat.

Plowing by Electricity.—This is the latest, but it has been done with perfect success in Sermaize, a three horse-power machine being used.

Trouble with Butter.—"Mrs. M." It is unusual to have trouble with the churning when cows are turned to grass; generally it is the reverse, and the butter comes sooner. Blue-Grass, called June-Grass in some places, makes excellent butter, and is considered superior pasturage, when young; when old and dry, it is perhaps the poorest grass for milk, and it may be that your Blue-Grass has passed its best stage, and has become dry and woody. A small quantity of green corn-fodder given daily might remove the difficulty.

The Charleston Phosphates are found in a great geological basin, which extends over many hundreds of thousands of acres, and the supply is practically inexhaustible. When treated with Sulphuric Acid, it gives about 12 per cent of the Superphosphate of Lime. Nearly two-thirds of the 200,000 tons annually "mined," goes to England.

Tethers for Cows.—We are asked which is the best Tether, and refer our inquirer to the one described and figured in the August number, page 298, of the *American Agriculturist* for 1878.

The Changes of the Season are the most critical times with animals, because important changes are then made in their food and consequently in their nutrition. This affects the entire system, and the more easily animals are let down from one kind of feeding to another, and the more nearly an even balance is kept, the more healthy they will be. Good feed one day or season, and poor feed another, and frequent irregularities, cause many of the diseases of cattle.

Beet Sugar.—France produced last season over eight hundred million pounds of beet sugar. They have over 500 successful manufactories. There would seem to be no reason why we can not compete with the old world in this industry, except the higher cost of our labor.

Live Stock.—Stock that has been running upon the pastures, usually require but little extra attention up to this time. Now that the pastures are becoming dry and hard, it is well to supply the animals with some extra food. But two months more come between summer and what may be considered winter as regards foddering. It is time now to consider what should be done to bring the stock into good order for the winter, remembering that to go into winter quarters in good condition is conducive to thrift all through the coming season.

Phylloxera and Black Rot.—Professor C. V. Riley, who has given a great deal of attention to this subject, is confident that there is no relation of cause or effect between these two serious troubles of the grape. 1st, the Black Rot does not accompany, nor follow the Phylloxera in Europe. 2nd, in many cases those least affected by the Phylloxera suffer most from the Rot.

The Floating Apiary of Mr. Perrine's, so much talked of last year, was in reality a failure, and the enterprise is abandoned. So many bees left the hives and never returned, that a floating apiary does not succeed.

Pleuro-Pneumonia has diminished greatly in those European countries where inoculation for it has been introduced. We may soon see this terrible cattle disease successfully treated by this method, as the dreaded small pox is now in the human subject by vaccination.

Seventeen-Year Locust.—This destructive insect is making its appearance in Missouri. The perfect insect lives but a short time, depositing its eggs in the branches of the orchard trees and nursery stock. The mutilation of the branches, caused by the female insect, injures them and causes them to break off.

Overhanging Trees.—There are sometimes unpleasant feelings arising from fruit trees standing near and overhanging the boundary lines. In such cases the law is that the tree and its fruit belongs wholly to the one on whose land the trunk stands, and he has a right to pick his fruit from his neighbor's side. If "on the line," the tree and fruit are to be equally divided.

Jersey and Alderney.—"J. A. R.," Delaware, Ohio. The Jerseys are frequently called Alderneys, but this is wrong, as the two breeds are distinct. These are both rich butter makers, but the Jerseys are larger and more valuable than the Alderneys. The Jerseys, as a breed, are the best butter makers in existence, although now and then a cow of another breed may excel them.

New Books.

"THE FERNS OF NORTH AMERICA."—Ferns are so strikingly unlike other plants that they are recognized at once, while their grace of habit and general delicacy of structure are quite sure to arrest the attention of lovers of the beautiful who find sufficient in them to admire without any reference to their botanical characters. On the other hand, botanists find in ferns objects of great scientific interest, and devote themselves to the study of their minute structure, and their wonderful methods of propagation, with great zeal. We have thus two distinct classes of fern lovers, the one, so to speak, *artistic*, and the other *scientific*. The first class show their admiration of ferns by cultivating them; by drying them under pressure—and no class of plants when thus treated hold, when dead, so much of the beauty for which they were admired when alive—and by using them as models for various kinds of decorative work in drawing, painting, wood-carving, etc.—in fact, the dried ferns themselves are often made useful in decoration. An intelligent fern-lover of this class, will naturally wish, among a multitude of the most graceful natural forms, to be able to distinguish them by names. If supplied with thoroughly accurate drawings, such persons can, as a general thing, ascertain the name belonging to a particular form. On the other hand, those who study ferns botanically find that the characters used in describing them are very minute, and sometimes obscure, and that carefully made, and if need be magnified, drawings of the parts are of great service in determining the genus and species. Accurate and life-like drawings of ferns then, are useful to all who have to do with these plants, whether as objects of science or objects of beauty. These are given in "The Ferns of North America," a work which combines in its engravings (drawn by J. H. Emerton and C. E. Faxon) the highest scientific accuracy with great artistic beauty, and meeting the wants of both the scientific and unscientific may be regarded as the standard work upon Ferns. We have only alluded to the work as to its engravings. The author of the work is Prof. Daniel C. Eaton, of Yale College. As Prof. Eaton is easily the first authority upon ferns in the country, and eminent among the authorities on these plants in the world, the scientific accuracy of the engravings is assured. While these engravings are of great value to fern-students, these will value not less the text, describing the species, and giving their popular history. Those who care nothing for the botanical description, will find in the text much to interest them concerning the discovery, localities, and other points of interest concerning each species. To botanists it is not necessary for us to commend a work by Prof. Eaton, and to such we may say that besides the *Filices* proper, the work includes the *Ophioglossaceæ*, and that the synonymy, as might be expected, is especially full.

In stating that Prof. Eaton's name is an endorsement of the scientific accuracy of the engravings, we would give full credit to the artists whose ability enables him to do this; Messrs. Emerton & Faxon are to be congratulated upon having produced a series of drawings, which, while satisfying botanical accuracy, so embellish the work that it may be prized by lovers of beautiful books. This valuable work, issued in two volumes, is supplied by the Orange Judd Company. Price of each volume, $15.00, post paid.

THE PACIFIC RURAL HAND-BOOK, by Charles H. Shinn; published by Dewey & Co., San Francisco, Cal. This contains a series of essays on Tree Culture, Vegetable and Flower Gardening, etc. The author is well known as a practical horticulturist, and a work especially adapted to their peculiar climate must be especially welcome to all cultivators upon the Pacific Coast. The title above given indicates both that it is a "Rural Handbook," and that it is issued by the publishers of our excellent contemporary, the "Pacific Rural," who send it post-paid for $1.

CAMERON'S PLASTERER'S MANUAL, by K. Cameron; New York: Bicknell & Comstock. A neat little handbook of 54 pages, giving descriptions of all the materials used in plastering, engravings of the various tools employed, and practical directions for the various operations of the plasterer's trade. Price 75c.

THE SCHOOL GARDEN.—Translated by Mrs. Horace Mann, from the German of Prof. Erasmus Schwab, of Vienna. New York, M. L. Holbrook & Co. The idea of attaching a garden to a school is a pleasing one; how far it may be practicable with any but a very small school is a question. This work will excite an interest in this direction, and if it only converts the present desolate school-yards and surroundings into something more attractive, it will be of great service. Price 50c.

BEE CULTURE; OR, SUCCESSFUL MANAGEMENT OF THE APIARY, by Thomas G. Newman; Chicago: Thomas G. Newman & Son. A neat and abundantly illustrated little hand-book of 80 pages, by the capable editor of the "American Bee Journal." In both English and German. Price, paper covers, 40c.

THE HEARING, AND HOW TO KEEP IT, by Charles H. Burnett, M.D.; Philadelphia: Lindsay & Blackiston. This is a small illustrated work of 122 pages, giving the anatomy and functions of the ear, and directions for preserving the organ in health. It forms one of a series called "American Health Primers," which, it is claimed, are published in the interest of sanitary science. To intelligent persons, works of this kind are useful. What may be their effect upon the ignorant, the nervous, and the chronically "out o' sorts," is a question. At all events, if we are to have popular books of this kind, it is fortunate that, like the present series, they are by men who stand high in the medical profession. Price 50c.

VADE MECUM OF EQUINE ANATOMY, by A. Liautard, M.D., V.S.; New York, published by the author. This is a hand-book of the anatomy of the horse, intended, as the title-page says, "for the use of advanced students and veterinary surgeons." Of course, a work of this kind has not a single popular feature, but, fortunately, the number of veterinary students and practitioners is yearly rapidly increasing, and such will find this work a useful remembrancer. The reputation of its author, who is at the head of the American Veterinary College, is a sufficient guarantee of the usefulness of the work to those for whom it was prepared.

AMES' ALPHABETS, by Daniel T. Ames, New York: Bicknell & Comstock. This contains 33 ample pages of designs for Alphabets, each page usually presenting a number of different styles. The author, who is styled "Artist Penman," would appear to have exhausted the capabilities of the alphabet in these designs, which range from the simplest up to the most elaborate, some being of exquisitely beautiful designs. The work is intended for architects, engravers, sign painters, etc., who must be difficult to please if they cannot find in this a letter suited to their wishes. Price $1.50.

HOW TO BREED LIGHT BRAHMA FOWLS, by Geo. P. Burnham, and published by the author at Melrose, Mass. This forms part seven of a series of treatises by one of the oldest, if not the oldest of our fowl fanciers and breeders. The experience and teachings of a veteran like the author, who claims to have had the Light Brahmas 30 years ago, under another name, must be of value to others, who can purchase the work for 50 cents.

A MANUAL OF INTERNATIONAL LAW, by Edward M. Gallaudet, Ph.D. L.L.D., New York: A. S. Barnes & Co. This volume, by the President and Professor of Moral and Political Science in the College for Deaf Mutes, at Washington, D. C., while intended as a class-book for colleges, is one which will interest the general reader who would acquaint himself with the principles of International Law. Beginning with the law among the ancients, its progress is traced up to the present time, and discusses the diplomatic questions brought forward by the late civil war. The mechanical style of the volume (pp. 321, 12mo) is such as characterize the productions of these publishers. Price $1.50.

FERNS IN THEIR HOMES AND OURS.—This beautiful work by Professor John Robinson has met with such a large sale that a new and enlarged edition is now called for. Price $1.50, post-paid. Address Orange Judd Company.

FISH-HATCHING AND FISH-CATCHING.—By R. B. Roosevelt and Seth Green. The authors of this little work have become authorities upon the various subjects which they treat. Price, post-paid, $1.50. Address Orange Judd Company.

PRACTICAL BOAT SAILING.—By Douglas Frazar. The author claims that this volume will enable any one who masters it to successfully and safely sail a boat. Price $1.00. Address Orange Judd Company.

State and Other Hand Books.—Within a few years several States, whose areas are out of all proportion to their number of inhabitants, have issued "by authority," works which present the claims of their States to settlers, with the laudable view of increasing their population, and adding to their prosperity. Similar works, more or less extended, have been put forth by Railroad and other Companies having lands to dispose of, and devoted to more limited areas than those issued by States. So far as examined, these "Hand Books" appear to us to be eminently useful, even those in the direct interest of corporations seem fair in their representations. A brief mention of those recently received is all that we can now give.... *Cheap Homes in Sauk Valley* is a title of a pamphlet by the "Sauk Valley Immigration Association." It may be had free on application to the Secretary at Sauk Center, Stearns Co., Minn....*A Hand-Book of Virginia.*—A volume of about 150 8vo pages, apparently carefully prepared by Doct. Thos. Pollard, Commissioner of Agriculture. Each County has its resources and advantages impartially indicated, and the work must be of great value to intending settlers in that State. We find no mention of the manner of distributing the work. The Commissioner's office is at Richmond....*A Manual of Georgia.*—This is also an official work, prepared for the use of "Immigrants and Capitalists" by Doct. Thos. P. Janes, State Commissioner of Agriculture. A personal knowledge of the author warrants us in commending this as a truthful account of the resources of Georgia. As the work is copyrighted, we assume that it is not issued at the expense of the State. The Commissioner's office is Atlanta.... *The Lone Star Guide* is issued by the International and Great Northern Railroad of Texas. This road runs from Galveston, northwesterly to Palestine, where it unites with another portion of the road running from San Antonio to the State line, consequently the road passes through some of the best portions of the State. The road has lands for sale. It sends this "Guide" free. H. M. Hoxie, Palestine, is General Superintendent.

Peach Yellows.—The symptoms are, the production of fine, tough young shoots from the sides of the limbs bearing leaves of a yellow color. The fruit ripens prematurely; is insipid in taste, and presents patches of dark-red color through the flesh.

Consumption of Sugar.—England heads the list, and consumes 50 pounds of sugar per head. The United States stands next with 44 pounds. France sweetens at the rate of 15¾ pounds, and Turkey uses only 3½ pounds *per capita*.

Corn is King.—Last year the Corn crop of the United States was worth 583 million of dollars, while *ex*-King Cotton gave us only 250 millions. Indian Corn is the sheet anchor of American agriculture, and demands our most careful consideration. What would England give if she could only raise Indian Corn!

Brewer's Grains.—In brewing, but a small amount of the valuable food materials is removed from the grain, and at the same time the process renders the grain soft and more easily digested. This constantly increasing product of the brewery has two principal disadvantages, namely: its tendency to sour in a short time, and the great amount of water it contains, thus making it unprofitable to transport it to any considerable distance. A remedy might be found in providing a place near the brewery where the grain could be thrown upon large screens in the sun, drained of the surplus water, and partially dried. A load of brewer's grains thus treated would represent vastly more food, and could be wet again before feeding if it should be found necessary.

Bee Stinging.—"Much depends upon how one is brought up." It is now claimed that a person who at first is greatly injured by bee stings may after a time become so accustomed to them, that they cause so little inconvenience that he may be stung and not know when the act is performed.

When to Cut Fence Posts.—James M. Ryan, Galena, Ill., in view of the different opinions as to the best time to cut timber to insure its durability, thus gives his experience: "The best fence posts, second only to Red Cedar, are made as follows: Strip the bark off of the young White Oaks (of the proper size for posts) from near the ground upwards sufficiently to deaden the trees, letting them stand for six months or longer, when they may be cut down and made into proper lengths for posts. As a result, the wood becomes solid and dry without cracking, and when cut will be fit for immediate use, and will be in a condition to exclude dampness from penetrating and rotting the post. The deadening may be done at any season, but the winter, or when vegetation is dormant, may be the best time. My experience has been with trees deadened when in full leaf, the wood of which, after they had stood about nine months, was found dried and solid, with the bark above the girdle loose, and easily removed."

Storing of Fodder-Corn.—The succulence of green corn-stalks renders them difficult to dry thoroughly. To stow away uncured corn-fodder, in stacks or barns, without precautions to prevent moulding, is unsafe. A good plan is, to shock the bundle in a convenient place, covering the top of the shock with a sheaf of straw, and binding the top tightly to exclude rain, and leaving the shocks out of doors until used. A few shocks may be brought in when needed, and will be found fresh, green, and in the best order. Sweet corn-fodder, with many small ears and nubbins on the stalks, may be covered and kept in this manner in the best condition.

Choice of Breeds.—The right thing in the right place is conducive to the best results. But it is unfortunate that so little judgment is exercised in selecting the best breed of sheep for use in particular cases. Persons are very apt to be misled by appearances, and a fine, large-bodied, long-wool sheep, which shows to advantage in an exhibition pen at the fairs, will tempt sheep-keepers to adopt that particular breed without consideration

as to the means at hand for keeping it. So a large-bodied, deep-uddered Dutch cow will mislead many a dairyman into choosing it for his special purpose, without a thought about its requirements as regards feed, pasture, etc. The same occurs with horses, and it is not at all uncommon to find ill-judged selections made of horses for farm use. If we were to choose our farm stock as carefully as we choose a coat or other garment, fewer mistakes and more profit would be made. It is an American failing to be easily misled. The success of adventurers and humbugs of all kinds, show this to be true, if it were not proved so completely by the many costly failures resulting from choosing homes even without due consideration, and from selecting at hap-hazard whatever stock animals may take the fancy or may have been bragged over by irresponsible or too sanguine persons, leaving afterwards unavailing regret at mistakes which take years to rectify.

Broad Wheels.—It is strange that the popular prejudice in favor of narrow tires for wagons and carts should be so firmly fixed as to prevent the use of broad tires. A wagon or cart with tires three or four inches wide may be drawn across a soft, newly-plowed field without cutting in, and on wet, muddy roads the surface is not cut up, but is packed down. The better condition of the roads and the saving of cost in repairs to them by the use of broad tires, would be enormous every year. Nevertheless, narrow tires are used almost universally.

The Wheelbarrow is almost as necessary upon the farm as a plow. The occasions when a wheelbarrow can be used, with both comfort and advantage, are innumerable. To be most serviceable, a wheelbarrow should be both strong and light. The wheel and tire should be made wider than is generally found. Wheelbarrows on the farm are frequently used on soft ground, and if the wheel is wide, it runs much easier. The wider the wheel, the more stable the barrow is when being moved. The "dump" form is the best for general use, as this has no sides to get lost; barrows of this style are usually better braced and durable. In getting a wheelbarrow, get the best, and keep it under cover when not in use.

Tree Planting in Door Yards.—It is a mistake to plant trees which grow naturally to a large size, near a house; and in an artistic point of view, the force of this remark is very evident. The trees when grown should be in proportion to the size of the yard, and if that be small, the trees should be selected accordingly. There are a number of evergreens such as varieties of the Spruces and others of small to medium stature, most appropriate to small yards; they are comfortable in winter as a wind-break, and handsome all the year round.

The Cincinnati Industrial Exposition has become one of the prominent institutions of the country. Its Exhibition this, its seventh, year will be held (Sept. 10th to Oct. 11th) in its new building, erected at a cost of one million of dollars. But our present mention is suggested by the receipt of the "General Circular," which in artistic execution calls for special comment, and in its contents, giving the classification of the objects to be exhibited, shows that this important matter has been carefully considered, and we have, well in advance of the time of opening, a schedule which could only be produced by competent hands. The Departments, distinguished by letters (A to Q), are 14, while these are subdivided into classes, numbering in all 85. Its Premium List, with plans of the building, and rules governing the Exhibition, is in equally handsome style. If the adage, "Well begun is half done," has force, the managers may congratulate themselves upon most satisfactory progress.

The White Ash, at three years, in good average soil, will reach a height of 7 to 8 feet and one inch in diameter; at five years, 10 feet in height and two inches in diameter. This is, all things considered, one of the most valuable timber trees to plant upon fairly good soil.

Sheet Iron Shingles.—Shingles of wood are in such general use with us, that they may be regarded as the roofing material of the country. As shingles grew more costly, our people did not go back to the earlier, cheaper, and in many respects excellent, thatch, but sought out new substitutes. These have been, as a general thing, a coarse or cheap fabric filled with some pitchy or "asphalt" composition, with or without the addition of gravel, or other material to give it body. None of these roofing materials appear to have come into general use, and while they answer fairly for temporary structures, their general lack of durability unfits them for permanent buildings. The most recent substitutes for shingles are the "Metallic Slates or Shingles," made by the "Iron Clad Manufacturing Company." Metallic roofs are among the oldest; lead, copper, zinc, and tin—or properly tin plate, having been used for roofing, though scarcely any of these except tin plate have been laid to any extent in this country. A tin roof well laid and properly painted is very permanent upon a flat roof, but the difficulty of laying, and of keeping in order increases with the pitch of the roof. One great difficulty with such a roof is, the sheets being soldered together, it is practically in one piece, and the contraction and expansion with the changes of temperature in such an extent of metal, causes the joints to break; besides, however well protected with paint it may be above, moisture can reach it from below, and rust may cause serious injury before it is discovered. These difficulties are avoided in the Metallic Shingles, these being in separate pieces, much like wooden shingles in size. Expansion and contraction being confined to each individual shingle, the roof, as a whole, is not affected, while they are equally protected on both sides from moisture. These Metallic Shingles are 8¼ by 16 inches, with the lower half, wedge-shaped, or brought to a point. They are ingeniously grooved to produce lapping in laying, and this grooving both supplies water channels and strengthens each shingle. These shingles struck us favorably when presented to our inspection, but fearing that some defect not manifest at first, might be discovered by the storms of winter, we have deferred saying much about them until they had been properly tested. A careful inspection of roofs that have been covered a year or more, shows no signs of leakage, or other defect, and we feel safe in advising those in search of roofing material to examine the claims of the "Metallic Slates or Shingles."

A Firm of Long Standing.—Time matures and ripens many things besides wine. To say of a concern, "it is one of the oldest houses in its line of business," means something more than to indicate age; it implies that the house has a substantial basis, or it could not have endured the commercial changes and panics; it indicates that its dealings have been such, as to hold customers, when once secured, and many other things. The firm of Chapman & Van Wyck, is one of the oldest dealing in Peruvian Guano, in New York City, and when we say that they have been in the same business for over 30 years, those who know the changing character of New York business houses, are aware that such stability can only be acquired by real merit. This period has seen marked changes in the Guano trade, and covers nearly the whole of its history as a fertilizer, in this country.

Heredity and Variation.—Every living thing is influenced by two great and opposing laws—First, *Heredity*, or the tendency to be like the parent—embodied in the axiom "like produces like." This is strengthened by breeding those individuals which are the most nearly similar. The second, *Variation*, or the tendency to be unlike the parent; this is strengthened by breeding those individuals which are not similar, but as widely different as may be. In general "in-and-in" breeding strengthens *Heredity*, while crossing gives scope to *Variation*. Breeders of stock of all kinds should be familiar with, and regard these matters.

Sun-Stroke is caused by excessive heat; but loss of sleep, worry, and general debility will predispose one to it. Those obliged to work in the hot sun should wear a light straw hat with a wet cloth within; a cabbage leaf is often used for the same purpose. If a feeling of dizziness comes on seek a cool and shady place at once, and apply cold water to the head. Ammonia should be inhaled if faintness is felt, but very cautiously.

Pork-Making.—Chicago is now the greatest pork-packing city in the world. She has over forty establishments where hogs are converted into pork, in some of which all the preliminary stages of killing, scalding, scraping and dressing are gone through with in the space of ten minutes. Chicago claims to kill a hog for every ten seconds in the year. She is *Porkopolis* now.

Pure Coffee.—This is an age of adulteration, and the practice is carried so far that articles used for adulteration are themselves adulterated. Coffee suffers as much as any other single article from this contemptible deception. Almost every kind of seed large enough to roast is used for this purpose, and various roots from Parsnips to Dandelions are called into the service. Ground coffee will float on cold water, and not soon color the liquid; the adulterations will sink, and discolor the water at once. It is best to buy the coffee in the "berry," and grind it at home, or see that it is properly done. Even then one may be defrauded, as there are machines for making artificial green coffee.

Feeding Bran.—Bran is not only an excellent food for the production of milk in cows, but also for feeding young animals. It contains a large proportion of the phosphates, which are a most necessary part of the food of an animal, but one in which most foods are deficient. In a ton of wheat bran there is 54½ lbs. of Phosphoric Acid, and in a ton of rye bran 68½ lbs. Rye bran is also richer in Potash than that of wheat, by nearly 40 per cent; hence for food, and for the resulting manure, rye bran is preferable. In feeding bran the value of the manure should be taken into consideration. This, although it may not be seen so conspicuously, nor so quickly as the milk in the pail, or the increased thrift of a young animal, yet it as certainly exists, and in good time will show itself in the field. It is beyond question that in feeding a ton of bran, the larger part of the profit is made in the manure, and if one is satisfied with what he gains directly in the feeding, he may be all the more so with that which he receives in the manure.

String-Halt.—"W. A. E.," Arkansas City, Kans. String-halt is an affection of the nerves, by which the control of certain muscles of the hind leg or legs is lost, either continuously or spasmodically. It is incurable, but is mitigated sometimes by the use of Belladonna, Strychnine, or other antispasmodics or nerve medicines. No horse having this disease, which is an unsoundness, should be used for breeding.

Gapes in Chickens.—"W. F.," Brooklyn, N. Y. Gapes is the result of parasitic worms in the wind-pipe. The only cure is to dislodge them. This is sometimes successfully done by putting the chicks in a box, covering the top with a piece of muslin, and dusting fine lime through the cloth. The chicks breathe the lime, and as it comes in contact with the worms, these let go of the membranes, and are dislodged by the coughing and sneezing of the chicks. To prevent gapes, the chicks should not be kept on ground where fowls have previously been.

Ropy Cream.—F. D. Young, Altoona, Pa. When milk throws up a ropy glutinous substance in place of cream, it is an evidence that the cow is not in a healthy condition. A dose of Salts (12 oz.) may be given, and a few one ounce doses of Hyposulphite of Soda given daily may remove the difficulty. Clover alone is not good pasture for milk, and is apt to disturb the condition of the cow; if a few pounds of bran, or two pounds of cotton-seed meal are given each day, it will probably help to remove the ropiness.

Sowing Orchard-Grass.—"M. J. B." There is no other grass that does so well under shade as Orchard-Grass. If the ground is plowed and harrowed this month, the seed may be sown either alone or with a bushel of oats per acre. The oats can be mowed or pastured in October, or will freeze and die down, forming a mulch for the grass. Forty lbs. of Orchard-Grass seed should be sown per acre. Twenty lbs. each of Orchard-Grass and of Blue-Grass makes an excellent mixture.

"Big Head."—"M. W.," Davies Co., Ind. "Big Head," is incurable. It is a disease of the bones of the head, and can only be treated by removing the bones, which, in that part of the body, would obviously destroy the animal. The disease consists in the growth of spongy excrescences on the bone, which arise from scrofulous, or other unhealthy condition, which is constitutional. The disease may be mitigated, and the final result postponed by the use of Iodine and Hyposulphite of Soda, with Iron, but the advice of an educated veterinary surgeon should be taken, before using them.

Stagnant Water.—One of the most fertile sources of diseases is a pond of filthy water made so by soakings from the barnyard. Such a breeder of foul gases should not exist, much less be a repository for dead animals and decaying garbage.

Lambs for Market.—"R. S. G.," Houston, N. Y. The most desirable lambs for market, are a cross of Southdown on Merino. These are fat and plump, with small bones, and have the black faces and legs of the sires, which are a recommendation with the butchers. A cross of Cotswold on Merino, produces a larger lamb, but it is looser bodied, and more bony. Either the Southdown, or the Cotswold makes a good cross on Merino ewes, the mutton is good, and the lambs are vigorous.

Implements.—When the tools and implements are done with for the season, they should be thoroughly cleaned and put away in safe, dry places. It is a good plan to protect journals and gearings from dust and rubbish, by tying them up in stout paper or pieces of cloth. It will save much time and labor in cleaning them in the spring when one is busier than now.

Strangles in a Colt.—"F. K.," Etna, N. Y. The swellings of the glands of the throat near the angles of the jaws, are probably "Strangles," and not Goitre, which rarely appears in horses. Goitre is a permanent enlargement of the *thyroid gland*, supposed to be caused by the use of impure water. There is no suppuration, and the tumor is fleshy and vascular, and often of a gritty substance from the deposit of mineral particles. In horses and single hoofed animals, Goitre appears as two distinct swellings, while in others it is one, and appears in the

front of the throat. Strangles consists of a suppurative swelling, or abscess, adjacent to the glands, and often occurs in greater part on the inside of the throat, obstructing breathing and causing suffocation, (whence its name), if not successfully treated. Young horses are subject to the disease, which is a disorder of the blood productive of a poisonous discharge which should be encouraged to escape and relieve the system. The more perfect the escape the better recovery is made; absorption of the pus or poisonous matter of the blood causes dropsy, farcy, glanders, or an early death. The treatment should be such as to cause a vigorous ripening of the abscess, and a copious discharge. Poulticing the parts is recommended, and when the abscess becomes filled with pus, and is soft and yielding to the touch it should be opened freely and the matter discharged. The opening should not be allowed to close until the discharge ceases, when it will heal without trouble. It is well to keep a plug of lint in the opening to favor a free discharge, and to soak the lint in Compound Tincture of Benzoin as a stimulant. Goitre, on the other hand, can be safely absorbed, and to effect the absorption Iodine is employed, either in the form of ointment applied twice daily to the swelling, and rubbed in well, or in the form of the tincture, of which two or three drops are injected into the tumor by a hyperdermic syringe. This treatment needs continuing for some months, as the operation is very slow.

Nuts and Nubbins.

For rest, go to the forest.

The electric light keeps dark.

Needs looking into—a telescope.

Expensive wives make pensive husbands.

One touch of humor makes the whole world grin.

Toast by our bachelor friend—The day we celibate.

Temper is so valuable a thing that no one should lose it.

Folks are very foolish to take a *fresh* cold. If you must, get 'em *cured*.

"Who was the first man?"—Ans: "Adam."—"Who the first woman?"—"Madam!"

If you should ever come within a mile of my house I hope you will stop *there*.

A man has seen an oyster so large that it "Took three men to swallow it."

A brainless baby has been born in Washington. It is reported to have many sympathizing friends in Washington.

"But I will not linger upon this point," as the preacher said when he sat down on a carpet tack.

"I have named my rooster Robinson."—"Why."—"Because he *crew-so*."

"What does your dog want here," said a dry goods' clerk—"Muzzlin" was the ready reply of the dog owner.

A man in Maine is so tall that he never finds out that his feet are cold until they get warm again.

A college student, when asked what stars never set, replied *roostars*.

The way the earth "laughs with a harvest"—Hoe! Hoe! Hoe!

Skyrockets were recently quoted with an upward tendency.

An electrical girl has been discovered in Canada; she ought to marry a good conductor.

The young lady who married her father's coachman says she was driven to it.

"If I am stuck up, I am not proud," as the butterfly said when pinned to the side of the show-case.

A gentleman who had been struck by the young lady's beauty was determined to follow the injunction, and "kiss the rod that smote him."

And now an Englishman travelling in the Holy Land has discovered Jacob's well. Glad to hear it. We supposed Jacob died a good many years ago.

Our friends can go on with their tin weddings. We don't dread them half as much since the five cent counters were opened.

It was an Albany schoolboy who, believing in translations as free as the genius of our country, translated *dux femina facti:* the fact is woman is a duck.

A young lady of New Fairfield, Conn., last year made three-quarters of a ton of butter and disposed of it herself.—*Cincinnati Gazette.* Thunder, what an eater.—*Boston Post.*

A military man, pitching into an opponent, exclaimed: "Why, his sword was never drawn but once, and that was in a raffle."

Down in Georgia, says the Louisville *Courier-Journal*, they are in favor of removing the tax on quinine and putting it on dogs. Changing the duty on bark, as it were.

The gang of burglars who work for seven straight hours to hammer a safe to pieces to secure fourteen cents, know how a country minister feels next day after a donation visit.

"It's only a spring opening, ma," exclaimed the boy as he exhibited his torn trousers after a leap over a picket fence.

"Ye are the children of the devil," was the text of the divine in the morning; in the afternoon it was "Children, obey your parents."

An Atlanta darkey who tried to send one of his children through the postoffice was arrested for attempt at blackmailing.

"George, dear, don't you think it's rather extravagant of you to eat butter with that delicious jam?"—"No, love, economical; same piece of bread does for both."

Charles Lamb, when spoken to for getting to his office so late in the morning, replied, "Yes; but you see I make it up by going away earlier in the evening."

A grocer had a pound of sugar returned with this note: "Too much sand for table use, and not enough for building purposes."

"I'm kept so busy with this big estate my brother left me," said a sharp Yankee lawyer, "I declare sometimes I almost wish John hadn't died."

Bachelor Sam Scudder, of Wild Cherry Creek is quite bald. When the girls see him coming, they say: "Here comes 'Bal'sam of Wild Cherry,'" and then begin to cough

It must have been a sweet little creature who said that fireflies were made by God to "y'te ze 'ittle froggies to bed."—If she is 17 years old, all the same.

A gentleman noticing that his wife's bonnets grew smaller and smaller, and the bills larger and larger, calmly said: "I suppose that things will go on until the milliner will send nothing but the bill."

"We are two to two," said the card players at one table.—"And we are *two to two too*" responded a player at an adjoining table. No wonder a German, present, likened our language to a French horn.

A weather-wise man said: "After three successive frosts always look out for rain."—"But suppose you don't have any frosts at all," said his wife.—"Well, always look out for rain anyhow."

"Who's there?" cried a gentleman disturbed from his rest by some one knocking on the door.—"A friend," was the reply.—"What do you want?"—"I want to stay here all night."—"Queer taste; but stay there by all means."

An obliging spirit prompted the Jersey farmer who put a two-pound whetstone in every turkey he sent to New York market. He knew the buyers would find the stones indispensable when it came to carving the fowls.

A dissipated and unmannerly nobleman, presuming upon his "nobility," once asked Sir Walter Scott, who sat opposite to him at a dinner, what the difference was between Scott and sot.—"Just the breadth of the table, Sir."

Mrs. Mackay, wife of the Bonanza king, has over $250,000 worth of jewelry, and when she gets the toothache she suffers just as much as the woman whose bracelets and diamonds came from the ninety-nine cent store.

Edison has worn his head nearly bald trying to invent a machine that would calculate with some kind of accuracy the difference between the weight of a fish when it is first taken out of the water and when it gets into the newspapers.

Fresh, (anxious about his rank), to Professor of Mathematics—"What will be my rank for the term?" Professor—"That is not easily determined; it is less than any assignable quantity."

A young man, the other day, got married against the wishes of his parents, and, requesting a friend to break it to them, said: "Tell them I am dead, old fellow, and gently work them up to the climax."

"How is it, miss, you gave your age to the census-taker as only twenty-five, when you were born the same year I was, and I am thirty-nine?"—"Ah, you have lived much faster than I, sir."

There is an old lady, 107, in Boston, who never uses spectacles, and whose sight is as good as ever it was. [P. S. The *Boston Post*, which records this remarkable fact, adds that the old lady was born blind.]

Ladies beyond the thirties choose wide ribbons for decorating costumes.—*Albany Argus.* See here; have you got a grudge against some man who has a lot of wide ribbon for sale.—*Boston Post.*

A London newspaper relates that when a Frenchman, who fell overboard from the steamer which took the Cobden Club back from Greenwich, was rescued and returned to the deck, the first thing he courteously said was that he hoped he had not kept the steamer waiting.

A minister, who was speaking quite loud, saw a woman leaving the church with a crying babe, and thereupon exclaimed: "Your baby don't disturb me, madam."—"That isn't it, sir," she replied; "you disturb the baby." Of course every effect must have a cause.

A wag brought a horse driven by a young man to a stop in the street by the word "Whoa," and said to the driver: "That's a fine horse you have there."—"Yes," answered the young man, "but he has one fault. He was formerly owned by a butcher, and always stops when he hears a calf bleat."

Old Salt: "Too old to manage a boat, am I? I can still row and steer and set sails and scull—" Doctor: "Oh, an automaton could do all that. I believe man is but an automaton, after all."—Old Salt: "Could a tommy-ton take the roomey-tiz?"

A lisping boy was out in the back yard pounding on a tin pan. The father came in tired and sullen, and being disturbed by the noise, cried out: "What is turned loose in the back yard; a wild animal?" The little fellow replied: "Yeth, thir, it's a pan thir."

When Benjamin Franklin was an editor he was in the habit of writing to the young ladies who sent in poetry, saying in honeyed language that owing to the crowded state of his columns, etc., but he would endeavor to circulate their productions in manuscript. And then he tied the poems to the tail of his kite for "bobs."

Brown to Jones—"You missed it by leaving us at the lunch t'other afternoon. Champagne was excellent, and got better after you left. Jones—"Fact is, I had to get back to the store to look after the boys, and, just as I expected, when I got there I found everything topsey-turvey." Brown—"My experience, exactly. When I got home I found my wife and hired girl standing on their heads, and the house spinning around like a top."

At the steamboat explosion at Lake Minnetonka, a man who put out to the wreck in a boat succeeded in rescuing a lady, who at once piteously implored him to try and save her dog. This he refused to do, and a moment later she pointed to a gentleman, who, half in the water and half out, was clinging, beside the engineer, to a large piece of the wreck that was floating in the vicinity, and requested her rescuer to save him, too, as he was her husband. He was fished out, but the dog was not recovered.

A sad event has occurred in the family of asteroids. Hilda is lost. One of the nearly two hundred members of the planetary sisterhood revolving between Mars and Jupiter can no longer be found in her accustomed celestial haunts. It is not known whether Hilda has eloped with her father's coachman, or has run away and joined a travelling Pinafore troupe. We have predicted time and again that if Hilda's parents didn't keep a close eye upon her she would give them trouble. Being a revolver, it is not strange that she has "gone off."

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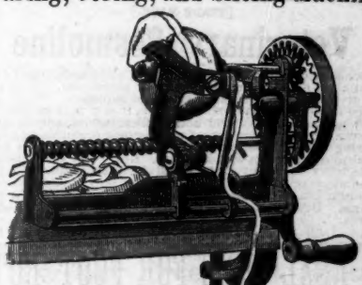

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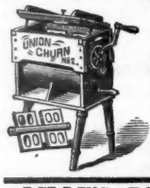

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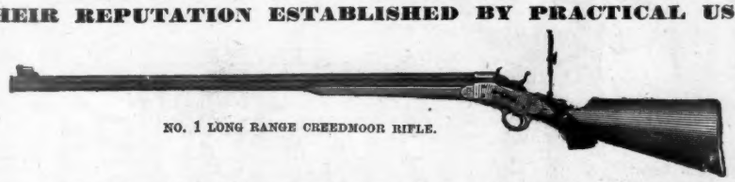

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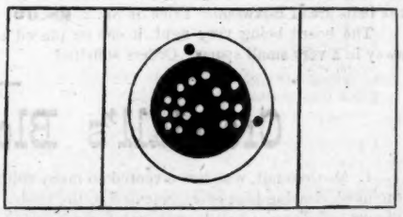

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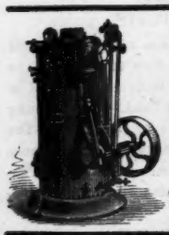

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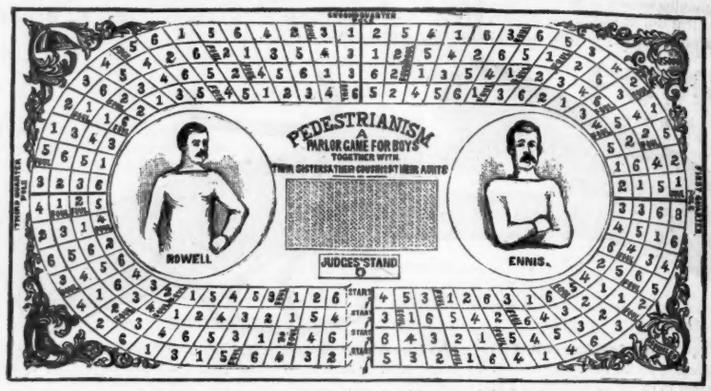

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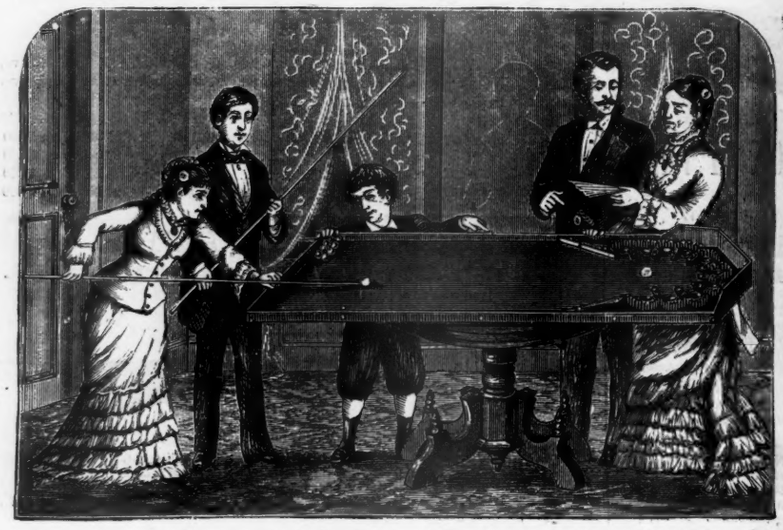

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